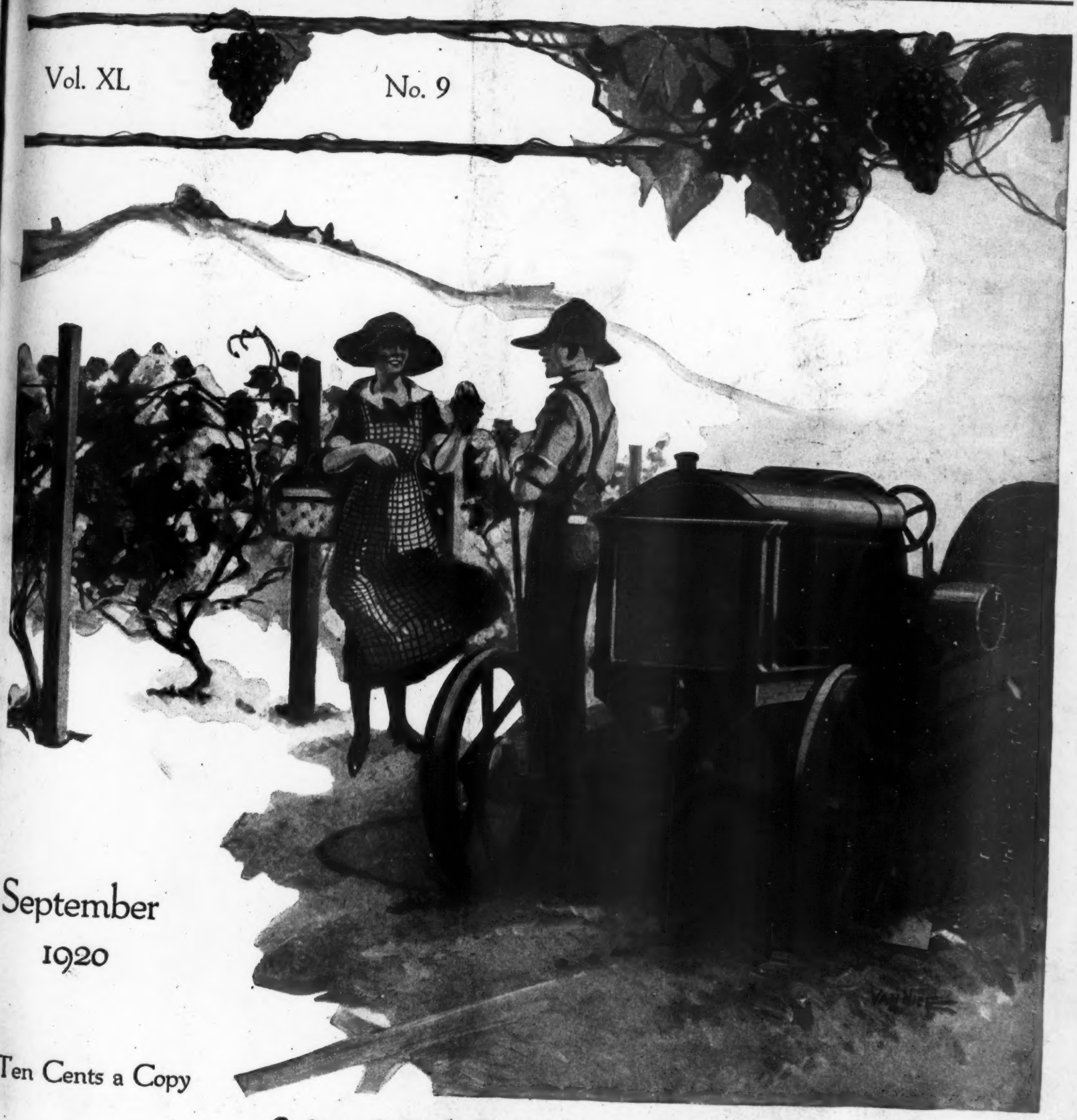
AMERICAN FRUIT GROWER

Vol. XL No. 9



September
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Edited by Samuel Adams

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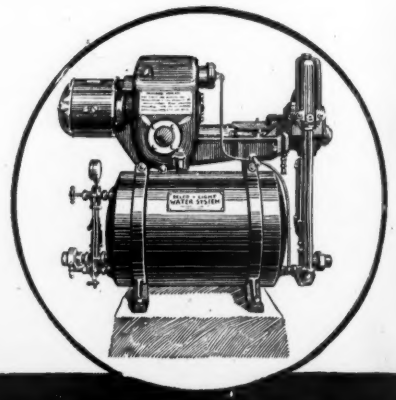

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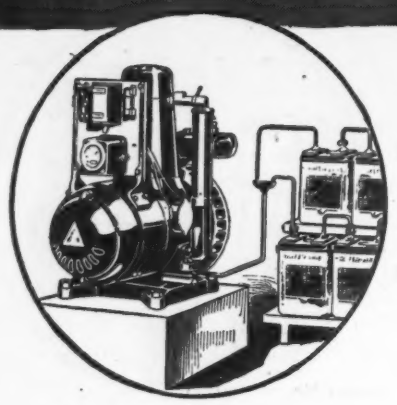

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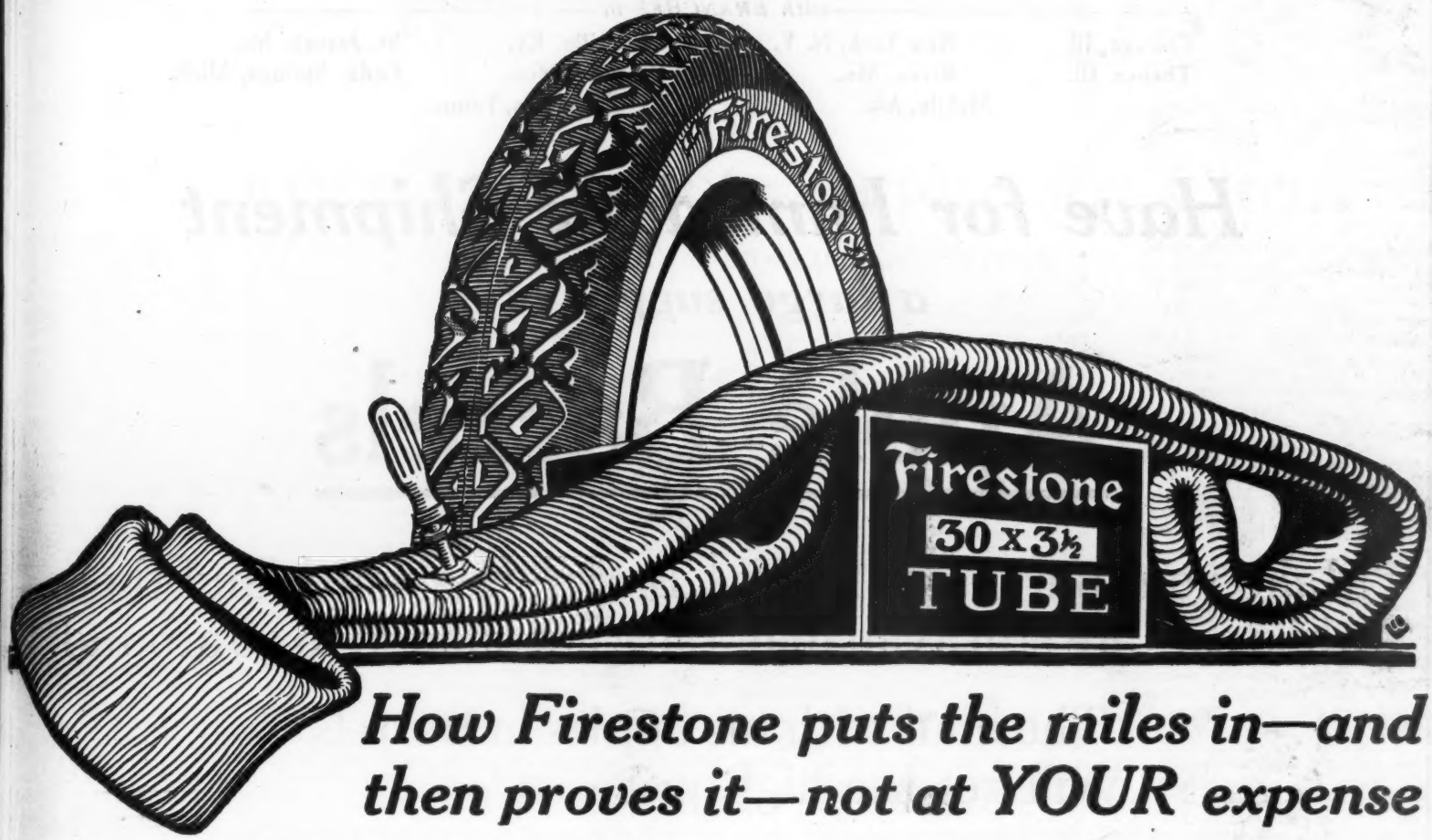

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Poultry a Source of Manure for Citrus

By Robert W. Hodgson, California

FORTY years of experience in the production of citrus fruits in Southern California has demonstrated no one fact more conclusively than that citrus trees require constant and regular fertilization if they are to continue to produce profitable crops. Failure to fertilize other classes of orchard fruits may not result in disaster for years, but the omission of suitable fertilizers to bearing citrus orchards is speedily reflected in the profits returned to the owner. There is no other necessity in orchard practice more generally agreed upon by citrus growers, as witnessed by the hundreds of thousands of dollars annually expended for fertilizers to be applied to citrus orchards. In nine cases out of 10, the grower who is making a conspicuous success is the one who is intelligently and adequately feeding his trees.

Necessity of Organic Matter

All the more recent investigational work points strongly to the very great importance of the annual incorporation into our citrus orchard soils of large amounts of readily decayable organic matter. No longer is it felt that the addition of fertilizers containing principally phosphorus or potassium is of great importance. A 12-year citrus fertilizer experiment at the Riverside Experiment Station has failed to show any marked beneficial results following the application of these elements in rather large amounts. Moreover, the presence of large quantities of decaying organic matter in the soil acts to set free considerable amounts of phosphoric acid and potash previously unavailable which, at present prices for these elements, certainly constitutes the cheapest method of providing them even were they needed.

Without sufficient organic matter, no soil, even though it be adequately supplied with all the mineral elements, can support plant life satisfactorily for any considerable length of time. Further, the incorporation of readily decayable organic matter in the soil largely takes care of the nitrogen question, since organic matter contains notable amounts of this element and at the same time furnishes food and optimum conditions for the activity of beneficial nitrogen fixing and nitrifying bacteria. In addition, nitrogen from organic sources has apparently proven more acceptable to citrus trees in California than mineral nitrogen. For these as well as other important reasons it seems that the greatest emphasis should be placed on the maintenance of a high, active organic matter content in citrus orchard soils. It is not enough that merely organic matter be added for such could be accomplished by the use of peat or other inert materials, but the organic matter added must be of such a nature as to be active or readily decayable.

Sources of Active Organic Matter

At the present time three general sources of active organic matter are available to citrus orchardists. It may be added to the soil through the use of a green manure crop, or by the application of animal manures, or by the incorporation into the soil of bean straw, alfalfa hay, or other readily decayable material of a similar nature.

But in many of the older orchards a green manure cover crop cannot be grown satisfactorily on account of the large size of the trees, which shade the ground and prevent its growth. And in certain sections cover crops in young orchards are not practical on account of lack of irrigation water or because of peculiar soil conditions. This latter is particularly true of the heavier types of soil such as the clays and adobes and is all the more so where the winter rainfall is sufficient to almost saturate them, then ceases in early spring and within two weeks the soil has dried out to the point where it is impossible to plow with any degree of satisfaction. The mere physical difficulties of handling the winter cover crop especially in parts of the San Joaquin Valley are sufficient to discourage its use.

The supply of animal manures at the present time falls far short of the demand. Citrus growers have been for sometime bidding one against the other for this material greatly to the satisfaction of the manure dealer. With the advent of the truck and tractor the manure supply is ever decreasing, rendering the situation truly a desperate one, for in addition as the competition to obtain it has increased, prices have gone up. In far too many cases the quality has deteriorated.

Bean straw and alfalfa hay at present prices are worth far too much as feed for livestock to induce growers of these products to sell large quantities of them to citrus growers for fertilizer. Even were the supply adequate and certain, which is not the case, it is a question whether these materials should be allowed to be sold to the citrus grower for fertilizer before being utilized by the livestock farmer for feed. Certainly alfalfa at $20 and bean straw at $14 comes high as fertilizer, especially when one considers that if fed to stock and all the manure, both solid and liquid, conserved, 70 per cent is regained in the manure and urine.

Dairying Not for All

What is to be the future supply of active organic matter for the citrus grower is a question already being raised in the minds of many orchardists. With a large and increasing acreage which cannot be cover cropped, with the supply of animal manures decreasing and prices ever advancing, and with at best an uncertain supply of other sources of organic matter, prices for which fluctuate according to the feedstuff market, the organic matter situation will soon be extremely serious.

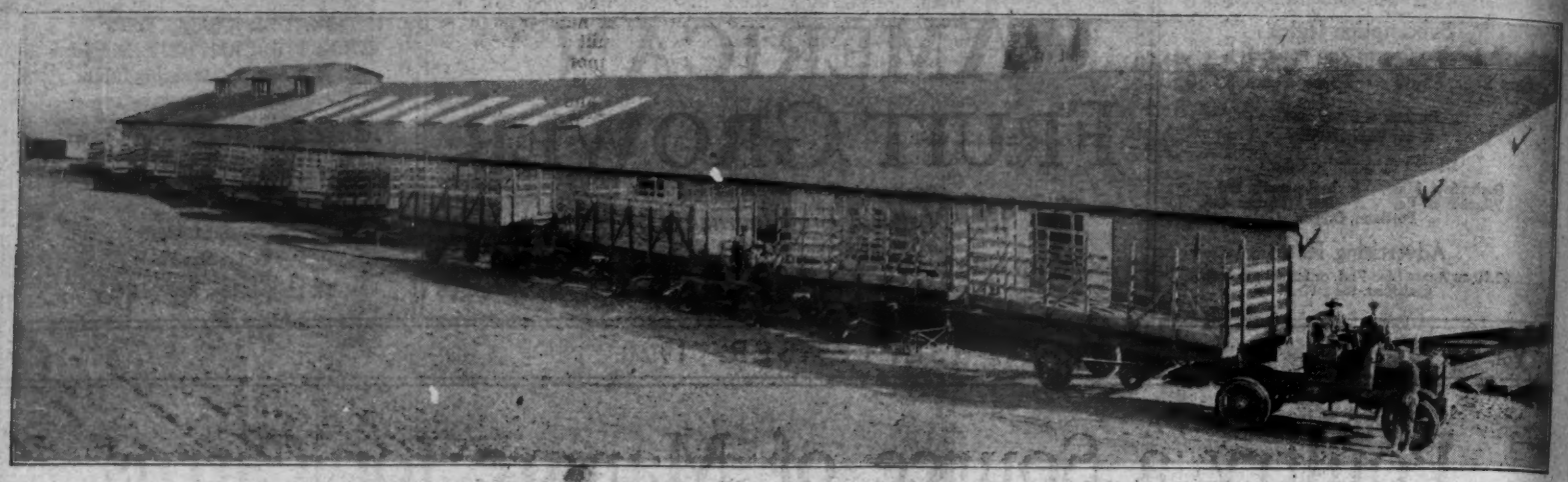
Fundamentally, the solution for this perplexing problem lies in the extension of diversified farming in which the raising of livestock plays a prominent part. Among the most common suggestions offered for diversifying citrus orcharding is that of combining a dairy herd with the orchard. It is said that such a combination is almost the universal thing in the orange orchards of Brazil. While in a small way this suggestion is capable of application even at the present time, there are many almost insuperable difficulties which will operate to prevent such a combination from ever being used on a large scale, at least until a number of radical changes in rural economics in southern California occur.

In order to maintain a dairy herd one must have alfalfa and a relatively large amount of land, at least no less than one acre to the cow when pastured, and a half acre when soiling is practiced. At present valuations citrus land and water are far too valuable to use for the growing of alfalfa and the carrying on of a dairy business. For success in this branch of agriculture relatively cheap water, and at best only moderately priced land are prerequisites. No sane person would think of raising alfalfa on $1,000 an acre land with 3 cent water. It simply can't be done and have the books come out on the right side of the ledger. The fertilizer obtained would cost far more than at the present prices for fruit citrus growers can afford to pay. To be sure citrus growers may eventually have to come to the place where one-fourth the present acreage fertilized with manure from the rest of the land will be far better than no profits at all on an acreage not possible of fertilization. But such a transition will not come voluntarily unless our citrus growers are gifted with perspicacity to a most astonishing and unexpected degree. Just so long as it will be found possible to make returns on the investment, orchardists will continue to put off the time of reckoning. And then it may be too late.

No doubt there are available considerable areas of low-lying land at present not planted to citrus which could be put into alfalfa or some other rank growing legume to be harvested and fed to animals or applied directly to citrus orchards as fertilizer, but even with these lands the high cost of water will work to prevent such tracts from being utilized for his purpose. So long as it is more profitable to plant these lands to other fruits and crops they will not be put into alfalfa. The scarcity of water in southern California is an important contributing factor to prevent this part of the state from ever becoming an alfalfa or dairying country, the success of which industry requires an abundance of water and relatively cheap land. The citrus industry in southern California is simply a victim of its intense specialization and any radical change toward diversification is bound to disturb the whole economic

(*Continued on page 29*)

Experience Has Demonstrated No One Fact More Conclusively Than That Citrus Needs Constant Fertilization



Three Tractors and Nine Trailers Make up the Transportation Fleet in this Mammoth Orchard

Only Four Thousand Acres of Apples

By C. I. Lewis, Associate Editor

THE Dufur orchard is one of the show spots of Oregon, located 15 miles south of The Dalles, in the heart of one of the state's best wheat belts. The orchard runs along a ridge of hills for 11 miles. There are diagonal rows which are probably about nine miles in length. The contrast of the beautiful green of the trees and the ripening grain fields surrounding them, is one to be long remembered. Two-fifths of the trees are Jonathans, two-fifths Newtowns, and about one-fifth divided between Banana, Rome, and Black Ben.

The history of this orchard is a very interesting one, and one from which many a large orchard in the United States can greatly profit. The trees are nine, eight and seven years of age. The orchard was established in 1911, 1912, and 1913, just at the beginning of the apple slump. It had been sold to 400 buyers of 10 acre tracts, each with contracts for care for five years. The apple slump with its general depression caused most of these people to early get cold feet. Perhaps 75 remained loyal to the orchard. Mr. A. C. Churchill, the president and general manager of the orchard, early saw that the Dufur orchards would become either a dismal failure, or a brilliant success. He dropped all his other activities and enlisted his splendid administrative ability entirely in this one project. He worked out a definite policy. This policy met the approval of but few of the orchard owners, but Mr. Churchill closed his ears to the criticisms, to insinuations that he was operating the orchard to furnish fat salaries, or to feather his own nest.

He went straight ahead and has developed the orchard, and probably what credit is due anyone for this magnificent performance is due to Mr. Churchill. In all big developments here in the west, there is always a personality which stands out strong. The Dufur orchard people have been fortunate in having such a personality to direct their affairs. It was a staggering proposition to meet. Bankers would not be interested in financing such a proposition and Mr. Churchill went to private individuals until he had his first crop and since then several banks have lent him some assistance and the fruit buyer has made liberal advances.

The plan which Mr. Churchill has worked out, was during the first five years, caring for the tracts according to contracts. The sixth year, the Dufur Orchard Company was formed to harvest and market the crop. The next year, the company was to handle the tillage and cultivation. The third year, Mr. Churchill succeeded in getting the owners of orchard tracts to exchange their title to tracts for stock in the general orchard. In other words, with one stroke he removed the great weakness of the average large orchard, namely, individual control of small tracts, which always means that a few will care for their tracts, and many will not, resulting in a general depreciation of the entire orchard and a condition which in many cases, eventually leads to abandonment. Today, Mr. Churchill has 4,000 acres of orchard, all well cared for.

In the beginning there was 400 stockholders, now there are 325. Mr. Churchill has taken advantage of the mistakes made by many others in another direction, namely, he has kept down his office expenses and general overhead.

Estimated Cost of Growing Crop 1920 Season

Pruning (labor) and brush burning	$ 11,001.62
Cultivation	10,084.45
Spraying and Pests—4 sprays at $3,262.30	13,049.20
Spraying and Pests—Gophers and Blight	5,505.85
Thinning	9,000.00
Fertilizing	2,118.49
Superintendence	2,416.00
Foremen	6,719.73
Employment Agency	372.00
Cook House and Bunk House	
Teams and Team Hire	22,036.00
Gasoline	3,000.00
Oils and Grease	1,600.00
General Expense	1,000.00
Liability Insurance	1,557.70
General Insurance	1,500.00
Taxes	3,481.39
Light and Power	910.00
Depreciation on Buildings	5,544.50
Depreciation on Equipment	14,373.22
Repairs and Maintenance to Packing House and Equipment	15,000.00
Cover Crops	652.94
Total	$129,923.18

The accompanying table of costs includes the cost of production. It must be borne in mind, however, that many of the items such as superintendence, foremen, employment agency, insurance, etc., should be partly charged up to expense of harvesting and marketing.

In addition to himself, he is very ably assisted by D. Campbell; H. C. Stockdale, superintendent of operations; and R. C. Stockdale, horticulturist and efficiency expert, forming an able team as the general work in the orchard testifies. The other men on the executive staff are, C. C. Fultz, assistant superintendent; A. M. Sobieski, purchasing agent, and P. E. Temple, general foreman.

The cost of maintaining a 4,000-acre orchard is beyond the comprehension of the average man. Yet one will be surprised to see how low the general maintenance cost of the Dufur orchard is at the present time, and it must be borne in mind that many of these costs will not materially increase.

Machinery is King

While the ranch maintains from 100 to 140 head of horses to operate the spray rigs and handle the tillage, its work is ably supplemented by machinery, and eventually machinery will do about all the work on the ranch. The orchard is equipped with three tractors, and nine trailers. It is interesting to see how such equipment is used. First, in spraying, one of these tractors will haul two 800-gallon tanks of spray. Each outfit can take 10 trips a day and thus handle 16,000 gallons. These tractors and trailers keep busy 36 power sprayers of three well known makes. It requires 10 days to spray the orchard once.

In hauling the fruit, the tractors and trailers are at their best. Each tractor has three trailers, one being unloaded at the packing house, one being loaded in the orchard, and a third en route. At each load, 320 orchard boxes of apples are hauled to the central packing plant. After the fruit is packed, 280 packed boxes are hauled at each load. Last year, one driver in one night of 10 hours hauled fruit enough to fill three carloads. This means rapid, efficient handling before the fruit can deteriorate. Last year the crop was 70,000 packed boxes. This year it will be 100,000 boxes, and in the near future will be many times this amount.

In the packing house, machinery again is king. This is said to be the largest and best equipped apple packing house in America. It is 380 feet long, equipped with seven grading machines, and a full equipment of gravity conveyors. The fruit is delivered at three doors, placed on gravity conveyors which conduct it to a common run which feeds all seven machines. The empty boxes and the packed fruit are also taken by the gravity carriers to the temporary storeroom and loaded for the warehouse at the depot. The fruit always moves in one direction. Girls are brought up from California to pack the fruit. In this one house, 8,000 boxes of apples are packed daily. This year, a new box making machine is to be introduced which operates by electricity. It will make boxes about as fast as one can feed in the lumber.

Mr. Churchill and his efficiency man are at work now in evolving a combination of tractor and spray tank. They expect by another year to have a spray rig thus equipped

One of the Tractors With a Trailer-Load of Apples at the Last Harvest

which will handle 1,200 gallons in one load. This will be spray enough to go down the rows three miles and to turn and come back an additional three miles, making a six-mile round-trip.

Mr. R. C. Stockdale, the horticulturist and efficiency man, occupies a unique position in the place, a position which many other large orchards could install to their benefit. He is conducting various experiments such as the one stated above in working out cheaper and more efficient spraying. He has carried on in co-operation with the Oregon Agricultural College, elaborate gopher control experiments. This year, experiments with nitrates, cover crops and tillage are being carried on.

He handles the entire orchard on the map system. For example, his pruning map may show patches of red, indicating that the orchard has been pruned; in another section, patches of green denoting a certain type of pruning desired; another may show a patch of blue meaning the trees are not to be pruned at all. He has a very unique way of keeping track of all equipment. Each sprayer is numbered. He jabs a pin bearing the number of the spray rig in the map, showing its exact location. Should this sprayer break down, he immediately attaches a red flag, the repair man goes out there, repairs the outfit, comes back and removes the flag indicating that they are ready to work again.

Mr. Stockdale can tell you exactly what it has cost to keep up each sprayer the company owns. He keeps a good supply of all parts, each part being numbered and recorded. His pruners and teamsters are handled on the score-card system. In the pruning, for example, if a man scores over 85 per cent he will get a certain salary; if he scores below that, he gets less money. The basis of scoring depends upon non-talking, judgment in heading, judgment in thinning, judgment in cutting to buds, adapting pruning to varieties, speed, cross cuts, and his ability while he prunes, to note the presence of such pests as San Jose scale, borers, aphis, etc.

In grading the teamsters, he takes into account such points as care of team, the fitting of collars, cleaning of harness, promptness, kindness to animals, and careful driving. At the present time, the efficiency man and Mr. Churchill are working on an irrigation plan for the orchard. Originally it was thought that this would cost a tremendous sum, but they have now worked out a scheme whereby the orchard will be irrigated at a surprisingly low cost. At the present time, however, the trees are growing well without any irrigation.

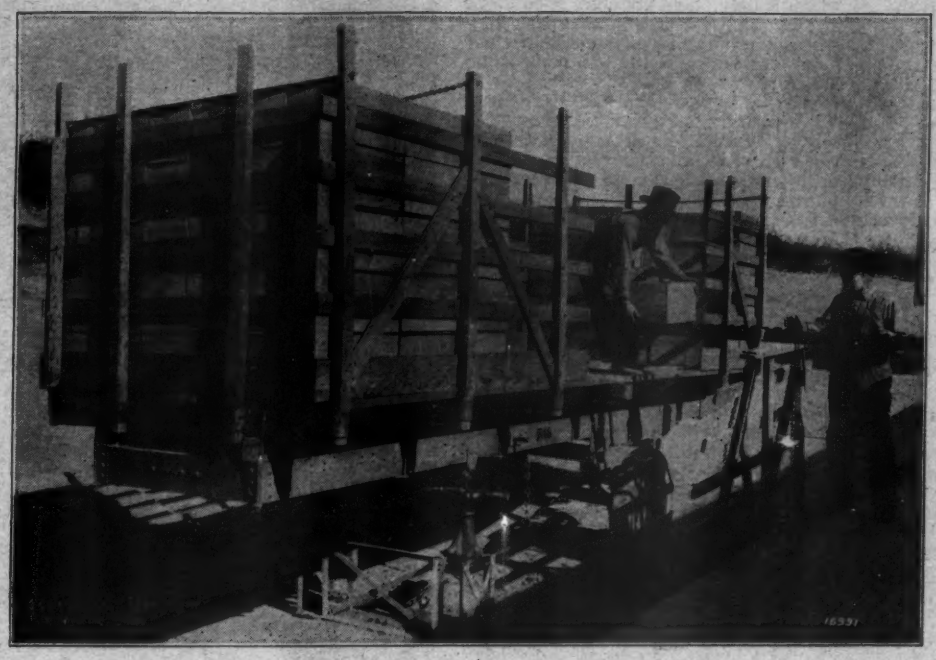
Handling the Help

What is the equipment necessary for such an enormous ranch? In the first place, the equipment is located in two camps. There is a central office and a mess hall that will seat 250 people at each camp, as well as a bunk house, a string of cottages for married men, a commissary supplying groceries, gloves, hats, etc., for families and laborers, a group of barns, an equipment shed and a modern blacksmith shop electrically operated. There is a huge central packing house, and a warehouse 350 feet long at the depot. This sounds like a great deal of building and equipment, but when one realizes the magnitude of the orchard, it is indeed very reasonable.

It takes some help to handle an orchard of this size. Seventy-five people are employed regularly, 150 are used during the summer rush, and from 400 to 500 during the harvesting and packing. Mr. Churchill and his associates have left no hand unturned to look after the comfort and health of the help. Everything is scrupulously clean. Mr. Churchill is a crank on sanitation and believes truly that cleanliness is next to godliness. In no place in this huge orchard, at the barns, in the yards, the kitchens, the mess halls, the commissary, or the highway, is there any litter or dirt. Truly, it is refreshing to note this condition. In each mess hall there is a piano, and at frequent intervals the help holds dances. Windows and doors are carefully screened and flies are kept away.

The single men sleep in bunk houses, but each man has a separate room, electrically lighted. He has every encouragement for cleanliness as there is a splendid lavatory with eight or 10 showers in each camp. The men are organized into basket ball teams, into a band, and have a regular government rifle team, Uncle Sam furnishing rifles and ammunition. In the winter, target practice is held in the mess halls, in the summer in the open. Every fall before the harvest a big dance and banquet is held by the company. Last fall, they fed 700 people at this annual ball.

The orchard management is looking forward to the time in the near future when more married men can be employed, already a number of neat cottages have been built at each camp and in the near future more are to be built. The married man is more satisfactory, more dependable and stays on the job better and in the long run he is cheaper. In past years the orchard has depended to quite a large extend upon employment agencies to secure adequate help but this plan has not proven altogether satisfactory and often far from economical, as the company is obliged to pay the car-fare for such help which may remain but a very short time. Again much of the class of labor is unskilled, unsympathetic with the management and on the whole far from satisfactory. The manager is now employing most of his help direct, and during the packing season is now able to secure experienced packers from California. These packers have had a long season of experience in California, are expert, rapid and on the whole more satisfactory than local packers who must be trained locally and who have not already had long experience.



One Trailer is Unloading onto a Conveyor at the Packing House

High Quality Fruit

It is generally believed that the fruit which comes from a very large orchard is apt to be of inferior grade when compared to that which is grown in a relatively small orchard. This I believe cannot always be substantiated. There are many small orchards in Oregon this season that will not furnish nearly as large a percentage of extra fancy and fancy fruit, as will the Dufur Orchard Company. The Winter Bananas produced in this orchard are grand, of high color and clean as a whistle. The Jonathans produced last year were so fine as to command favorable comment from many parts of the Northwest. As yet the Newtowns have borne but little as this variety is still too young to bear heavily but what are producing give promise of satisfactory grade. Climatic conditions surrounding the orchard are such as to not encourage scab, the greatest enemy of the Newtowns. The secrets of the good fruit from this orchard, are good management, eternal vigilance on the part of the two Stockdales who offer every inducement to the help to produce high class fruit, and detect pests before they dominate the orchard, the utilization of tractors, trailers and superb packing facilities and good general management.

What culls are produced on the ranch can be easily disposed of in the nearby city of The Dalles. Mr. Churchill last season had a local cannery put up a large supply of apples in gallon cans for use in the mess halls in order that the help can have an abundance of apple sauce and pies. The management is now laying plans to establish a by-products factory right on the ranch whenever the tonnage will warrant.

Few Trees Missing

One of the remarkable things about this large orchard is the relatively few missing trees, there are very few missing trees and only a few replants have been necessary. Rodents have taken the greatest toll, but the efficiency man has reduced them till he has nearly all the remaining ones named.

The Northwest passed through one of the hardest winters in the history last year, yet this orchard came through with little or no damage. Located as it is up on the high rolling hills perfect soil and air drainage is secured, and the cold air has a chance to roll down the ravines and gorges of the Columbia basin. From the Atlantic to the Pacific we are coming more and more to realize that the rolling land is the safest for orchard purposes as far as loss from climatic causes is concerned.

The Dufur orchard is one of the best for the student of Orchard Economics to study. The orchard is a living demonstration that large orchards can be made successful. The causes of success are not hard to analyze, skillful management, the working according to a definite plan which will not mature for several years, keeping the managing board intact, working on the budget system, daily scrutiny of costs, employment of machinery, using an efficiency expert and knowing how to use him, furnishing adequate packing and shipping facilities. These are the factors that are making this orchard a success and will make any other orchard a success.

In visiting this orchard, perhaps you can express your thoughts better in a short sentence, namely, a mighty big job well done. Truly the orchard is a glorious sight, as it covers the rolling hills, the trees in splendid vigor with their dark green foliage extending as far as the eye can see; in the surrounding country the green and brown grain fields make a pleasing contrast to the orchard.

Interior of the Packing House Showing the Graders, Conveyors and Packing Stands

Machine-Made Cherries of Door County, Wisconsin

By Arnold P. Yerkes, Illinois

IF SOMEONE will invent a machine to pick cherries, the orchardists of Door county, Wis., could truthfully designate their crop as "machine made," for the picking of the fruit is practically the only operation for which modern machinery is not used at present in the growing of the large quantity of cherries for which this section is renowned.

To the average visitor, the outstanding feature of the Door county cherry industry is the almost universal employment of modern machines and equipment in the handling of the crop. The use of horses in the cherry orchards of this neighborhood is comparatively rare. Practically all the work of cultivation, as well as the other kinds of work involved, such as hauling spray materials, the sprayer itself, pulling manure spreader, and hauling out the cherries, is done by tractors or trucks.

The cherry industry in Door county has earned itself an excellent reputation. With exceptionally favorable soil and climatic conditions, the successful growing of small fruit was a practical certainty, but the unusual success which has been attained by the cherry growers of this neighborhood can be largely traced to the fact that they have almost without exception followed the very best practices, so far as known, in every line of the business.

The raising of cherries in Door county is a comparatively new enterprise, the oldest orchard being only about 20 years old, while the majority of those now in bearing are only about half this age. Unlike the cherry growers in many other sections, therefore, the orchardists in Door county have not been hampered by custom or prejudice. The business was new to practically everyone, and there was no one who thought they knew it all from the start—everyone realized they were traveling an unknown path, that they had much to learn, and were willing to listen to recommendations and suggestions from experienced men. As a result, the recommendations of the horticulturists of the Wisconsin state college and other men with wide experience in fruit growing have been followed quite closely, and the thrifty appearance of the orchards, as well as the generally satisfactory returns from the business, show that this policy has been a wise one.

If you lay your left hand on a flat surface, with the fingers close together and the thumb slightly extended, the outline of your hand will make a rough map of Wisconsin. The thumb represents the long, narrow peninsula formed by Lake Michigan on the east and Green Bay on the west, with a small notch at the inside of the thumb joint, which represents Sturgeon Bay, an arm of Green Bay. A ship canal which has been cut from Sturgeon Bay to Lake Michigan makes an artificial island of the northern half of this peninsula, which is only about six miles wide north of this point. South of Sturgeon Bay the peninsula widens somewhat, but its base is not more than 15 or 20 miles across.

The soil in this peninsula is of glacial origin, neither heavy nor light, but of a medium texture, sometimes sandy, sometimes gravelly, and nearly always stony until the stones have been removed by human agency.

Like practically the entire state of Wisconsin, this section was at one time heavily wooded. The timber was removed years ago, leaving the familiar "cut-over" land. Only a few small patches of the original timber are to be found, but they give an excellent indication of the condition of the country when the white man first entered it.

The Sturgeon Bay section has for years been famed as a vacation ground. It abounds in beautiful scenery, boasts the best of hunting, fishing, bathing and boating, and every year there has been an increase in number of pleasure seekers spending their summers there. A great many summer hotels and camps for the accommodation of such visitors have been built.

General Farming Failed

Eastern Wisconsin is one of the oldest settled regions west of the Alleghenies. The thriving business city of Green Bay represents the metamorphosed French trading station of the pioneer days. The early settlers were almost entirely immigrants, most of whom came from Norway, Sweden and Germany, with a scattering of Danish, Belgians and Hollanders. These pioneers settled among the stumps and began clearing the ground for farming. The section was admirably adapted to dairying, and as these settlers were accustomed to this type of farming in their own countries, the business has thrived until Wisconsin has become the leading dairy state of the country.

The eastern peninsula above referred to was settled by the same class of farmers as the eastern part of the state, and for years they carried on practically the same type of farming as their neighbors farther south, but with rather indifferent success. On account of the more plentiful sprinkling of stones of all sizes, this land was much more difficult to clear and farm, and the farmers on the peninsula never made any great success so long as they followed dairying and general farming.

The Motor Truck Does Its Part in the Prosperous Cherry District

During the past 20 years, a decided change has occurred in the type of farming on the peninsula, and this change bids fair to make Wisconsin almost as well known as a cherry producing state as it is now for dairying.

The story of the development of the cherry industry in Door county is an interesting one. About 20 years ago, A. L. Hatch, a well-educated farmer who had traveled and studied extensively, recognized the possibilities of the peninsula as a small fruit section. He operated a farm on the peninsula and frequently expressed to his neighbors the opinion that the section was destined to become a small fruit-growing region because of its natural advantages of climate and soil.

It was on the advice of Mr. Hatch that a Mr. Lawrence planted the first cherry orchard in that neighborhood. The original orchard comprised 6 acres, and while now past its prime it is still a profitable one.

The results from this first orchard were a revelation to the neighboring farmers. For four years in succession, and this at a time when fruit was not nearly so high as at present, the six acres of cherry trees netted an average income of $2,600, or better than six per cent interest on $40,000, while the cost of the orchard was only a small fraction of this sum. The land on which this first orchard was planted had been cleared, and as it was close to the town of Sturgeon Bay it was more valuable than a great deal of land not so favorably situated, but at best its market value would not have exceeded $200 per acre. At that time cherry trees could be bought for 15 cents each, and the labor of planting and caring for the orchard until in bearing did not amount to nearly so much as would be the case at present. It is perfectly obvious, therefore, that the expense involved in the bringing of this first orchard to bearing age did not represent more than two or three thousand dollars—probably not more than the net income from the orchard for one season.

The Tractor Is Decidedly Popular with the Door County Cherry Growers

More Cherries Planted

Because of the success of Mr. Lawrence's orchard, a great many nearby farmers began setting out cherry trees. Some of the orchards were planted on freshly cleared ground, while others were set on land which had been farmed for some time. Experience has shown that the orchards on freshly cleared ground almost invariably do better than those on land which has been farmed, which in a way is advantageous, since it offers a means of converting what would otherwise be almost valueless land into a very profitable orchard. Some of the cut-over land which had been considered too rough and stony to make it worth clearing for farming purposes was cleared up and planted to cherry trees, with just as satisfactory results as where the trees had been planted in the best of soil.

During the past 20 years the cherry industry in the Sturgeon Bay territory has grown from a single orchard of six acres into an industry which today embraces several thousand acres and is by far the most important and profitable industry in the vicinity. No figures are available as to the acreage of cherry orchards on the peninsula at the present time, but it is safe to say that the next census will show a very decided increase over the acreage reported in 1910.

Vacationists Grow Cherries

At first the cherry business was conducted entirely by men who were operating dairy farms in the Sturgeon Bay community, but as the business developed a great many of the summer vacationists, who could see the profits which were being made on cherries, became interested in the business, and a large amount of outside capital has been invested as a result. Men engaged in various kinds of business, and who had come to that section for pleasure and recreation, saw an opportunity to invest small amounts of money with the possibility of receiving large returns and became interested in the cherry industry. As a consequence, instead of the industry being developed entirely at the hands of the farmers who owned the land, probably 50 per cent or more of the orchards are at present owned by people who live in nearby cities. Numerous small companies have been formed in different towns by investors who had spent their vacation at one of the summer resorts on Green Bay and who, when they returned home, persuaded their friends to invest some money in a cherry orchard.

The business grew by leaps and bounds, and each season saw a larger amount of new ground cleared and planted to cherries. For the past few years so many cherries have been grown in the vicinity that the problem of getting them picked and marketed, or canned, has been one of great importance. While some of the larger growers were able to handle their own picking problems, a great number of small growers found it difficult to manage satisfactorily until a system was worked out whereby the matter was placed very largely in the hands of one man, who obtains the pickers, provides camps and necessary accommodations for them, and contracts with the small growers to furnish pickers as needed. In this way the problem has been solved very satisfactorily.

The cherries grown on the peninsula consist almost entirely of Montmorencies and Early Richmonds. Approximately 50 per cent of the crop is canned in the canning factory at Sturgeon Bay, while the remainder is shipped

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With Our Editors

Greater Farm Bureaus

THOSE who have been interested in co-operative work among farmers are seeing their dreams come true in the co-ordination of the work of the county farm bureaus and the federation of these bureaus into one big national organization. "The American Farm Bureau Federation," says a circular just issued by the Bureau, "is a league of the farm bureaus of the nation, in which the common interests of all county organizations are united in the advancement of agriculture in the United States of America, economically, educationally and socially on a constructive basis."

The national federation was accomplished in Chicago, March 4, 1920, and now 797 county farm bureaus in 31 states have been accepted into the organization, with a total membership of over 900,000. This is a direct outgrowth of the county agent movement, and in itself marks one of the greatest achievements of the county agent. The federation is for the service of all persons engaged in agricultural work regardless of their political, financial or educational status. "It depends for its strength upon the kind of support given it by the local, county and state organizations, and the quality of the co-operation it receives from the various agencies interested in the welfare of agriculture."

In other words, the American Farm Bureau Federation stands for the advancement of agriculture, and an example of the manner in which it is tackling some of the big, vital problems was brought out at the recent meeting in Chicago in which the federation launched a plan for co-ordinating the work of selling wheat and livestock on a basis that will take it out of the hands of the speculator and make it possible for the producer to name the selling price.

Creating the Market

MANUFACTURERS no longer consider it the function of the dealer to create the demand for any manufactured article. It is the dealer's place to supply the demand that is created by the manufacturer, and some manufacturers now aid the retailer in special cases to such an extent as to make house to house canvasses for the commodity in addition to extensive newspaper and magazine advertising.

A parallel to this exists in some of the associations of fruit growers, particularly the larger co-operative associations of the Pacific Coast having large, well-trained sales forces. At least one such association has for some years had a staff of salesmen who called on the wholesalers and sold to them the fruit grown and packed by the association. In addition, special demonstrators were employed who worked among the dealers, teaching them more progressive methods of merchandising fruit and showing them how to make the most rapid turnover of their stocks.

Along with such efforts was a comprehensive advertising campaign in newspapers, magazines and other mediums to keep the name of the brand of fruit before the prospective consumer. We see this plan broadening out in another vigorous association. A circular letter has just been sent out by the California Almond Growers' Exchange to their dealers, and accompanied by specimens of window display material, in which we note two significant paragraphs:

"Perhaps we have a peculiar sense of responsibility," reads one of these paragraphs, "but it is so firmly implanted throughout this association that we can't get rid of it. We may be impractical from the standpoint of hard-headed business—but for the life of us we cannot see why the main burden of selling Blue Diamond Almonds to the ultimate consumer should fall to the retailer. We consider that our job. Our idea is that every dealer who stocks Blue Diamond Almonds should stock positive sales—and that is exactly what we mean he shall do this year."

In other words, the association, through its advertising, intends to create the demand for its brand of almonds, so that sales are easier for the dealer; so the dealer's stock will turnover most quickly, and his order renewed. Then, after describing the window display material briefly and naming some prominent magazines in which the association's advertising will appear, this paragraph follows:

"And please let us emphasize that all of this is your advertising campaign as well as ours. The Exchange is a strictly co-operative association from grower, broker, wholesaler to retailer—endeavoring to create a year 'round consumer demand for the finest almonds grown anywhere in the world—a thoroughly American product."

If you were a dealer handling such an article as almonds, wouldn't you be impressed? Wouldn't such a letter convince you that a co-operative association of growers had larger ideals than simply growing their crop? Of course you would, and so are those who are in the business and receive such letters. Are you a member of an association that is working on this broad gauge plan? Why not?

Amateur Nurserymen

THE present high prices for nursery stock apparently is tempting a number of inexperienced persons to propagate their own nursery stock, and to have a surplus for sale whereby they can make a profit in growing their own trees. It looks like an easy thing to do. Almost anybody can learn to graft or bud, for there is no secret to it. It is quite reasonable to assume that one can plant some seeds of a fruit in spring, bud or graft the seedlings that fall and have trees ready for the orchard and for sale the following season.

There is more to growing nursery stock than simply the ability to graft and bud. And when it comes to growing nursery stock for sale, there are a large number of purely technical features to the business that can be learned only through years of experience. One of the greatest troubles of the nursery trade today is that too many nurserymen are far more skillful as propagators than as businessmen.

There was a time when anyone who knew how to propagate could set himself up in business as a nurseryman. But state and federal laws have been passed from time to time, until the licenses that are required and the inspections that are necessary, make the business a precarious undertaking for the inexperienced.

Cider and the Dry Law

FROM a statement made by the local office of the Federal Prohibition Commissioner, there is no intention on the part of those who administer the dry law to persecute anyone who manufactures fruit juices. But they must enforce the provisions of the law in good faith and with as little hardship as possible. Because of the ease with which fruit juices, and particularly cider, will acquire a higher alcoholic content than is permitted by law, cider comes under the ban, and its manufacture now can be engaged in commercially only with federal permission.

As a result of the national prohibition act the heavy hand of the law may drop on some peaceful, respectable fruit grower who always has had the deepest regard for the laws of our country, and who has followed his former practice of pressing his cull apples into cider for sale. According to the provisions of the dry law, this fruit grower now must make application to the Federal Prohibition Commissioner at Washington for a permit to make and sell cider. When the permit is obtained, he may make cider only under the conditions prescribed by law.

Such cider must not develop more than one-half of one per cent of alcohol, except as it is being made into vinegar. Cider made from apples that contain a considerable percentage of rot is very liable to have the limit of alcohol at the time of pressing. The best of apples will develop the legal limit of alcohol within a very few days after pressing. In view of these facts, and in order to comply with the law three courses are open for the cider maker: one is to pasteurize the juice as soon as it is pressed; the second one is to add preservatives that will prevent fermentation and the third is to get the necessary permit to manufacture it into vinegar or else sell to some one having such a permit.

Motor Trucks Time Savers

ACCORDING to an investigation into the worth and service of motor trucks on eastern farms, specialists in the U. S. Department of Agriculture find that motor trucks, as compared to horses and wagons, last year saved from one-half to two-thirds of the time required for hauling materials to and from the farms. This information was gleaned from study of reports from 753 farms, and they showed further that trucks ranging in size from one-half ton to five tons were in use, with about half of them of the one ton size.

An interesting fact obtained from a study of these reports is that about one-fourth of those reporting have changed their markets for at least a part of their produce. Instead of patronizing their old markets at an average distance of seven miles from home, they go to better markets located at an average distance of 20 miles away. During the year these trucks traveled an average of 3,820 miles at costs ranging from eight cents a ton mile for the one-half ton trucks to 20 cents a ton mile for the two ton size.

The average cost of hauling crops, with the driver's time valued at 50 cents an hour amounted to 50 cents a ton mile with half ton trucks, 34 cents for three-fourths ton trucks and decreasing to 18 cents a ton mile for the two ton kind. Along with these costs, four-fifths of those reporting stated that their trucks decreased their expense for hired help, this decrease averaging $324 a year.

The principal disadvantage of the motor truck, according to this investigation, was poor roads. It is stated that there are about eight weeks during the year when the roads are in such condition, because of mud, snow, etc., that motor trucks cannot be used, as the roads over which three-fourths of the trucks had to travel were unpaved dirt roads. But in spite of bad roads, the average life of the trucks was placed at 6½ to 7 years, and the largest single item of expense in connection with their operation was that of depreciation.

Most of the owners of the one-half and three-fourths ton trucks prefer pneumatic tires, the owners of one ton are about half divided between pneumatic and solid tires, while those owning larger trucks were favorable to the solid tires.

Orchard Problems and Their Solution

By Paul C. Stark, Associate Editor

Ask Questions. No matter how big or how little your orchard, you are continually meeting up with problems that you would like to get information or advice about. Let us help you solve your orchard problems, no matter what state you live in, what fruit you grow or the size of your planting. Address Paul C. Stark, AMERICAN FRUIT GROWER, Chicago, Ill.

COMBINATION SPRAYS

In the spray schedule in the April issue of AMERICAN FRUIT GROWER the treatment for codling moth is lime-sulphur with arsenate of lead. In a leaflet issued by a manufacturer of a brand of nicotine sulphate it says to add nicotine sulphate to lime-sulphur and arsenate of lead. Which is right? Does the nicotine sulphate have any effect on the calyx worm?—F. N., Mass.

ARSENATE of lead is the material that poisons the codling moth as the worm starts to enter the apple. Lime-sulphur is for the control of such fungous disease as apple scab. The nicotine sulphate can be added to the mixture when plant lice are present, thus making a combination that will control codling moth, scab and lice. It is advisable to use the nicotine sulphate in the first application, as this will catch the plant lice when they are just beginning to work and before they have become numerous.

Worn Out Hill for Apples

Will apples do well on cheap, red clay hill soils of St. Louis or St. Charles counties, Mo.? Will stable manure mixed with the soil at planting time help any? Will trees planted in this ground take longer to get into bearing than if planted on better land? In cultivating a young orchard, is it sufficient to till only six feet each side of the tree row? Could one man, young and ambitious, plant and care for 40 or 50 acres of apples and intercrops for the first five or six years?—T. R., Mo.

THE Missouri counties you mention I have personally visited, and consider the soil well adapted to fruit. I am of the opinion a late government bulletin on a soil survey of these counties emphasizes the value of the soil for orcharding more so than for farm crops, as the land tends to wash if it is kept in continual cultivation. Even if your land is badly worn, by using plenty of stable manure mixed with the soil around the trees, and as a surface mulch, you should get good growth. You can build up the rest of the land by the use of cover crops. Young trees should be cultivated for a distance of at least four or five feet on each side. In the remainder of the space you can grow intercrops or cover crops, but if the land is badly worn I would not advise you to grow corn. Leading authorities recommend the use of intercrops, and the kind will depend on your land. I believe you can handle alone a 40- or 50-acre orchard with intercrops up to the time it comes into bearing, and make it pay for itself as you go along. When you have such an orchard in bearing, you have a small fortune and need not worry about the future as long as you do your part.

More on Contour Planting

Please explain more fully what is meant by "contour planting" mentioned in your department of the February AMERICAN FRUIT GROWER. Does contour planting mean for the rows of trees to follow and parallel (as closely as practicable) those terrace banks or is some other arrangement contemplated? I take it to mean that the trees are set the proper distance in the rows to get the desired number of trees on an acre and the rows run in conformity to the terraces. But I do not know and would like fuller explanation to guide me in setting a small orchard on a hilly farm I have just acquired.—W. F. M., North Carolina.

CONTOUR planting is practiced almost extensively in some parts of the South, where they have a loose soil that tends to wash very badly. It does not make as symmetrical an orchard as one of the standard square or triangular methods of planting, but, nevertheless, the orchard is planted out primarily for profit, and if money and labor can be saved by a certain method of planting, it is worth while following. In the contour method each row has all of the trees on the same level. These contour lines can be staked off very easily and quickly by the means of a surveyor's level or an ordinary farm level. Just bear in mind that each tree in the row must be located at a point at the same height as every other tree in that row, because all the trees will be on the same level.

By plowing parallel with these contour lines, no matter how crooked they may be, you can plow both ways toward the contour line and thus develop a terrace arrangement, each row of trees being planted on the top edge of the terrace. The upper side of the terrace will be more or less level and well adapted for cultivation and later for hauling the fruit. Just below the row of trees the terrace will be rather steep and will slope down toward the next row. Having these flat areas along the row or upper side of the trees will give a place to hold the water from rainfall long enough to let it soak into the ground. If there was not some arrangement of this sort the water would flow off the hill and in doing so would wash the land badly. The trees, of course, are set the proper distance in the rows. The contour system of planting orchards has not been used very extensively except in localities where the soil is so loose and washes so badly that other systems are less efficient.

Cultivation and Spraying Make Fine Fruit

J. O. Staats, of Dana, Ind., boasts of an orchard in which thorough cultivation is practised and where all the modern tools are used, with but little work done by horse power. This orchard is sprayed six times during the season, and its reputation draws customers from a wide radius who come to buy fruit for their own use. A large amount of small fruits are grown on the place.

Gooseberries and Early Apples

What do you think of planting two acres of gooseberries on new ground? Would they be a success? What varieties would be best? Is the Japanese walnut a success? I have some nice, rolling, cut-over ground with red clay subsoil that I want to plant to early apples. Would you suggest Yellow Transparent alone or would you plant two varieties? Do you think a fellow would go wrong in planting 500 grapes? —N. P. G., Ill.

GOOSEBERRIES are very profitable and ship well. Houghton is the standard commercial variety, although there are other kinds that have larger berries, such as Downing and Oregon Champion. You could plant the Japanese walnut in a small way for home use. Yellow Transparent apple is a good money maker. It bruises rather badly, but brings good money. There are many other varieties of early apples and I would advise the planting of one or two varieties, such as Liveland or Duchess. Grapes of suitable varieties are profitable, and the future for grape growing is brighter now than it has ever been.

Some Varieties for Commercial Planting

I wish to plant an apple orchard the fall of 1920 and have been just a little undecided as to the best varieties to plant. I am thinking of planting approximately 1,000 apple trees. Will you kindly advise me what varieties to plant, taking into consideration the following trees that I have already planted, some of which are in bearing condition: 350 Stayman Winesap, 420 Stark Delicious, 150 Black Ben, 200 Mammoth Black Twig, 150 Grimes Golden, 200 Williams Early Red.—A. E. B., Maryland.

THE varieties you have already planted will make an excellent orchard. In planting additional trees this fall, I would plant more of some of these varieties and possibly the addition of one or two other varieties. In your section the Williams Early Red has made a good record. If you are planting Mammoth Black Twig, be sure to get the strain that has proven to be a good regular bearer, not the large, dull green apple that is a shy bearer. The two varieties have been rather badly mixed through an error of the American Pomological Society in declaring them the same sort. Later they corrected this error, but in the meantime there has been a bad mixture. If you get the regular heavy bearing strain of Mammoth Black Twig (Paragon) it will be a money-maker for you. The writer has just finished planting an orchard of approximately 150 acres, and I have planted most of the varieties that you have in your list, with the exception that I planted a large block of the new late keeping yellow apple, Golden Delicious. This variety is similar to the Grimes Golden, except that it is a much later keeper. If you plant any more Grimes Golden, would advise you to use trees that are double worked on a strong, healthy stock.

Special Strains

A friend claims there are two kinds of Wealthy apples. One is eating and the other a cooking apple. And says that a Minnesota nurseryman advertises the two in his catalog. He also claims there are four different kinds of Baldwins. And mentioned one as White Baldwin. Kindly let me know who is right in this matter and oblige, E. P. W., Minnesota.

IN REGARD to the Baldwin apple this is an old time variety that originated near Lowell, Mass., about 1740. About 1850 it became more prominent and began to be planted quite extensively in New York State and there is now more acreage of Baldwin in New York State than any other variety. In other sections of the country it is not planted so much. In the South it becomes a fall apple and is not nearly so profitable as other varieties.

There have occured in various places different types of Baldwin, although it is believed that these different types are more or less influenced by location, soil and other conditions. In the American Fruit Culturist, by John J. Thomas, the author says: "The Baldwin is very liable to vary in color. The Late Baldwin appears to be a little darker, but is modified by external causes."

The Wealthy apple was originated by the late Peter Gideon of Excelsior, Minn. All varieties vary more or less in color, size, quality, and other characteristics. There are also variations in the producing quality of certain trees, and although this does not mean that these individual trees which have super merit are different varieties. It is the writer's opinion that it is a wise thing for nurserymen to propagate from those particular trees which show marked improvements as to size, color or bearing characteristics. If an orchardist has a block of Wealthy apples and one of those trees bears much heavier and more regularly and has a higher colored fruit than the other trees, I would rather have the trees for my orchard propagated from that particular tree.

Very extensive work has been carried on by the Dept. of Agriculture with citrus fruit, and they are recommending very strongly propagating only the heaviest bearing strains of the particular varieties. There have been several bulletins published on this subject, and if you would like to get them, you can do so by writing the United States Department of Agriculture, Washington, D. C.

About Cover Crops

Will a cover crop planted in a vineyard have any effect on the time the grapes will ripen? What is the best combination to sow? When should it be planted?—D. M. R., Mich.

THE cover crop would not materially effect the ripening of your grapes and the addition of humus that would result from plowing under such a crop would be very beneficial. In your section I believe you will find soybeans one of the best cover crops. Farther south, cowpeas are used successfully. In some of the eastern regions I have seen crimson clover used with splendid results. This is sown at the last cultivation and makes a splendid cover for fall.

It is estimated the cantaloupe crop of the Imperial valley last year amounted to $9,000,000.

The members of the California Prune and Apricot Growers' Association received $22,000,000 for their crop this year.

"The use of a truck on Goodyear Cord Tires has increased my land value by bringing my farm closer to town. Power machines, assisted by this pneumatic-tired truck, offset my labor shortage. The Goodyear Cords on my truck have traveled about 10,000 miles to date. Solids can't go into the soft fields; pneumatics go through easily—haul 450 crates to 40 by team. Hard to sell a second-hand truck on solids here."— Glenmore Green, Farmer, Fort Valley, Georgia

EXTENSIVE rural experience, like that related above, has confirmed the tendency of farm land prices to increase when Goodyear Cord Tires are used to cover long or difficult hauling routes.

Fertile acreages, ten to twenty-five miles from the nearest town, have become more profitable and hence more saleable due to improved transportation on these able and rugged pneumatics.

What formerly was a tedious and jarring haul by either team or motor truck, has become a brisk, smooth trip due to the grip, cushioning and spryness of the big Goodyear Cord Tires.

These virtues frequently enable short cuts to market, bring more markets within easy-hauling range and pave the way for the safe, punctual transit of perishables and shrinkables.

The huge strength of Goodyear Cord construction, developed with the manufacturing care that protects our good name, makes possible the utmost utility and economy of this type of pneumatic tire.

Detailed information, concerning the manifold advantages of pneumatic-tired trucks and general farm motorization, will be sent on request by The Goodyear Tire & Rubber Company, Akron, Ohio, or Los Angeles, California.

GOODYEAR
CORD TIRES

The Sealdsweet Fruit Grower

A section devoted to the activities of the FLORIDA and co-operative marketing of Florida fruit

What One Grove Produced Last Year

By H. H. Allen, Florida

HOW would you like to be the owner of a 10-acre orange grove in Florida and get $12,000 for your crop on the trees? Sounds fishy does it not? Well, read on if you are "from Missouri."

Some 30 years ago a gentleman from Massachusetts "migrated" to Florida to spend the winter in the state termed by John Ringling, of circus fame, as the "Promised Land" referred to in the Bible. The newcomer was so fascinated by the beautiful orange trees with their drooping branches laden with golden fruit, that he could not resist the temptation to get into the business of growing them. He selected a 10-acre plot about five miles west of Umatilla in Lake county, so named on account of its 1,400 lakes. He cleared the land and he set out about seven acres to citrus trees and gave them such care as was generally practiced in those days.

In the winter of 1894-5, two freezes, one in December and the other in February, layed their icy hands upon his little grove and completely wiped it out. Discouraged but not disheartened, Mr. White secured new budwood and cutting down the ruined trees, he rebudded on the roots which were uninjured. Having a large root system the buds came forth rapidly and in a few years were again bearing, and now, 25 years later, the trees are so large that though set 25 to 30 feet apart, there is barely room to walk between them.

I visited this grove in February of this year and the sight that greeted my eyes was one that caused me to marvel, though I have spent the past eight years in the citrus region of Florida and am a grower of citrus fruits myself.

Tangerines Made a Show

Picture in your mind this little grove setting upon the brow of a hill. To the north and west of it your eyes may sweep over hundreds of acres of peach trees then pink with bloom. In sharp contrast, this little grove with its green leaves and golden fruit was like a sunburst in its setting. Passing through the entrance gate we first beheld three acres of young grapefruit and orange trees, most of them just coming into bearing. Then on into the seven acres of bearing trees. It was the tangerine trees that commanded my attention. They were simply loaded, reminding one of a huge bunch of firecrackers by their reddish glow. The trees were as large as any I had ever seen. The lower limbs were all propped to hold up the fruit and afford it a chance to ripen. The fruit was very uniform in size, which was rather unusual where the crop was so heavy. Something like half of the tangerines had already been gathered and shipped to market, yet the trees were still bending under the burden of fruit that remained. The orange trees, while not so heavily loaded, were nevertheless well covered with fruit.

Now comes the interesting part of the story. The entire crop of tangerines has been gathered and results show 425 "straps." To the uninformed, a "strap" is two half boxes strapped together making a package the same size as a standard orange box. These tangerines were gathered mostly from 36 trees, 12 trees having little or no fruit on them this season. This makes approximately 11 straps to the tree. These tangerines brought $2,223.16 on the trees, or about $5.23 a strap, or $61.75 a tree. Not very bad for a half acre of trees. There were 2,361 boxes of oranges that brought $10,004.47 on the trees, or about $4.23 a box. Then there were 121 boxes of grapefruit from the young trees, which brought $146.26, as grapefruit prices, on the average, were very low this season.

Now add up, and you have a total of $12,373.98, all of which with the exception of $146.23 for the grapefruit, came from seven acres of oranges and tangerines, making an average of $1,746.80 per acre for the seven acres. No, this is not a record for this state, as there are groves that have netted $2,000 an acre or better for every acre in them.

Fruit Is Pooled

It should be explained that fruit from this grove was marketed through the Florida Citrus Exchange, an organization of the growers, for the growers and by the growers, to enable them to get all that is coming to them for their fruit. But for this fact, probably this story could not be written.

The fruit is pooled, each grade separately, thereby giving each member participating the full benefit of his own grade of fruit. Pools usually extend over a period of six weeks. Pooling protects each member from loss by reason of their fruit striking a poor market, as may sometimes happen. Members of the Exchange are also privileged to purchase all needed supplies for packing house or grove at cost through the Exchange Supply Company, a subsidiary of the Citrus Exchange, which co-operative buying affects a considerable saving to the members.

The Exchange has its own packing houses equipped to pick and pack the fruit in the best possible manner, placing it upon the market through their expert sales organization, the fruit being well advertised over the country under the famous "Sealdsweet" brand, which commands a premium in the markets.

In this grove 16 tons of commercial fertilizer was used the past season, in three applications, February, June and November. Clean culture is practiced excepting in June, July and August, which is the rainy season in Florida, when the grass and weeds are allowed to cover the narrow space between the trees to protect the roots from the hot sun.

The trees are sprayed twice a year for bright fruit and to hold in check the white fly and scale. All dead wood and water suckers are kept cleaned out and all small growth eliminated from the inside of the trees; the idea being to force all nourishment to the bearing surface of the tree, also to afford proper ventilation to the tree. No exact figures were available as to the expense of producing this season's crop, but $2,000 should cover the costs without much difficulty.

The soil is what is termed in Florida as high pine land, it being the average kind of soil, but of course greatly improved by the years of added fertility and cultivation. Intelligent care and up-to-date marketing methods are the two most important factors in making this grove so profitable. No doubt there are other groves in Florida that have done quite as well. Some of them have come to my notice now and then. Raising apples in York state; cherries in Michigan or peaches and grapes along the south shore of Old Erie may be profitable, but can they equal this?

Demonstrating Uses of Sealdsweet Citrus

By Caroline Moorehead, Florida

THE accompanying photograph was taken in the practice dining room of Winthrope College, Rock Hill, N. C., and represents a demonstration and display in which the home economics classes of the college took part. The purpose of the demonstration, which was made in the interest of the Florida Citrus Exchange, was to give the students and visitors a lesson in some of the many ways in which grapefruit may be used, both as fresh fruit and in cookery.

Grapefruit blends so splendidly with so many other fruits of Florida that a good combination of materials are always available. There are so many ways of serving grapefruit, each so delicious and attractive, that it is really a delight to work with it. In the display as pictured are shown grapefruit salads, cakes, custard pies, tarts, sandwiches, candy and several fruit juice drinks having grapefruit as a basis.

The serving of grapefruit salad on a cracker was a special feature of this demonstration. Grapefruit with salt instead of sugar was tried by many and found to be surprisingly delightful. Lectures were given in which the value of citrus fruits in the daily diet was urged, both for its merits as a food and as a tonic.

One of the most attractive of grapefruit dishes is the chrysanthemum salad. This is made from three Sealdsweet grapefruits. I say Sealdsweet, because that represents Florida's very best grade, in which case it is not necessary to pick and choose. Just take three, and if one is a bit larger than the other, use it for the bottom layer.

Cut the rind in four parts from end to end, except for about half an inch from the stem end. Cut the fruit loose and slip it out. Then you have the rind in the shape of a tulip. Cut each part of the rind again to near the stem end, and it may be laid flat on a cutting board. Hold it firmly on the board and with a small sharp knift cut each part of the peel into many very slender strips.

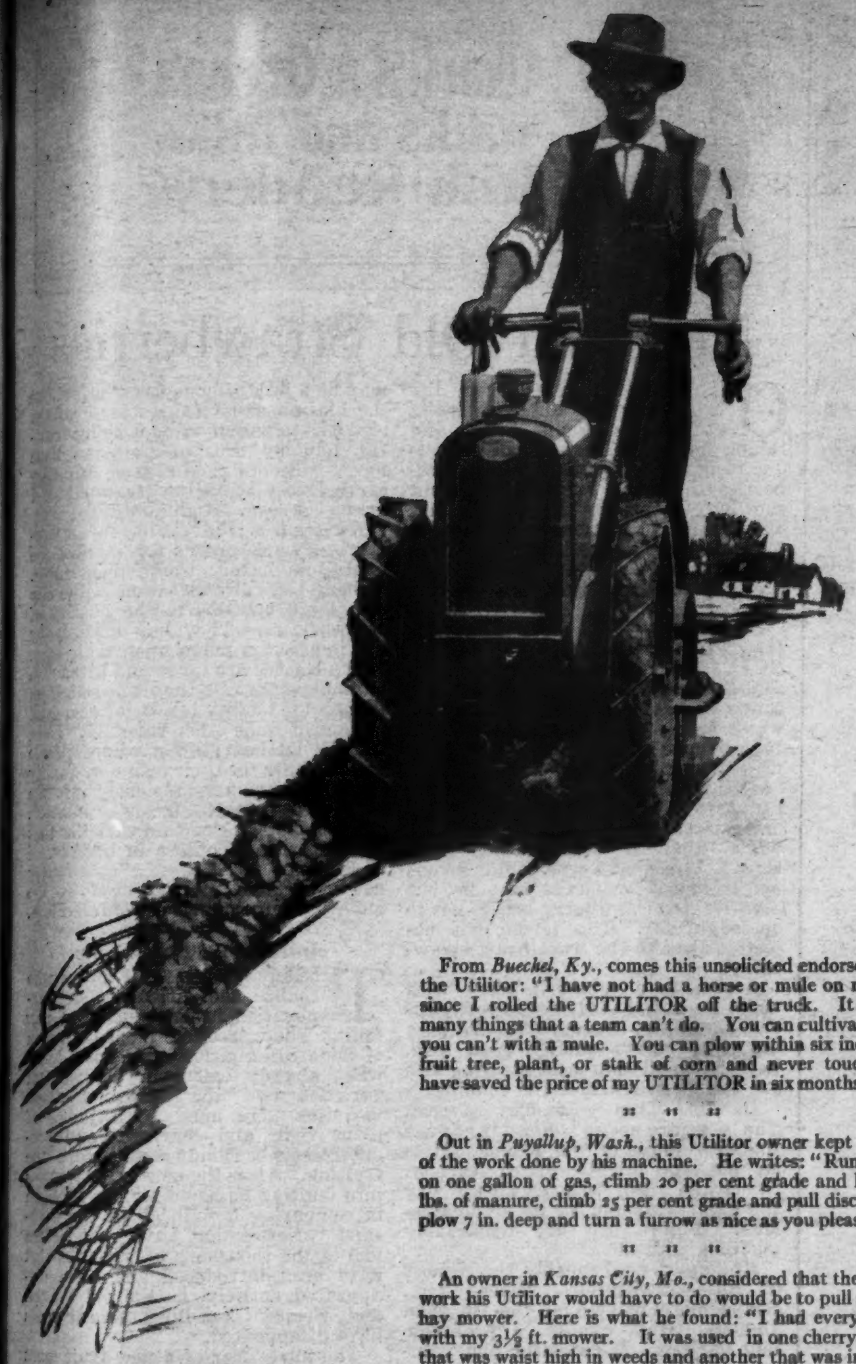
When the peels of the three grapefruits have been prepared in this way, arrange the larger one on lettuce leaves, or some other greenery, then the next and the next until you have the foundation of a beautiful salad dish. Let stand in dry air a few moments, and it will become curly like a blossom. Then break two of the grapefruits into small parts, removing the fiber or lining, drain off the juice and heap in the middle of the peel "chrysanthemum." Of the remaining fruit, use the whole plugs in so far as possible, putting them in upright so they will fill out and make a center for the flower. Over this, spread several spoonfuls of good mayonnaise dressing, scattered with bits of minced cherries. Then you have a dish that is not only attractive, but delicious and wholesome.

This salad is especially good with strawberries, or with red and green bell peppers minced fine; apples and nuts; or in fact, any fruit or vegetable in its season. One important thing to keep in mind when making fruit salads is not to combine too many flavors. The more simple the salad is the better it is, and of salads there are none superior to those made from Sealdsweet grapefruit.

WHO HAS BIG FRUIT FARMS?

A subscriber asks the question, who has the largest strawberry farm in the United States or in the world? We would also like to know. Will subscribers who know of large strawberry plantations please send us the names of the owners and the location? In addition we would like to have the names and locations of large fruit farms devoted to other kinds of fruits, such as apples, peaches, pears, prunes, grapes, oranges, etc. If you know of large individual holdings of any fruits, please send the names and locations of such plantations to the Editors, American Fruit Grower, Chicago, Ill.

Carbon black, obtained by burning natural gas, forms the color base for printing ink. The addition of carbon black to rubber increases its tensile strength by from four to 25 per cent, depending on the amount used. It is also credited with giving automobile tires greater resiliency.



Dayton, Ohio, July 6, 1920.

. . . . I never had a plow handle in my hands in my life until I took hold of the UTILITOR. I have three acres of corn planted, 500 tomato plants, 1,606 sweet potato plants, ridges made with UTILITOR, 3,500 Vinca vines, 1 acre potatoes furrowed by UTILITOR; 1 acre beans, and I want to say that weeds and stiff, hard soil on this whole place are out of the question, as the machine certainly keeps it in fine shape and does it quickly and easily.

Yours respectfully,

(Signed) CARL L. FIES.

R. 8, Dayton, Ohio.

From *Bueckel, Ky.*, comes this unsolicited endorsement of the Utilitor: "I have not had a horse or mule on my place since I rolled the UTILITOR off the truck. It does so many things that a team can't do. You can cultivate where you can't with a mule. You can plow within six inches of a fruit tree, plant, or stalk of corn and never touch it. I have saved the price of my UTILITOR in six months."

:: :: ::

Out in *Puyallup, Wash.*, this Utilitor owner kept a record of the work done by his machine. He writes: "Run 8 hours on one gallon of gas, climb 20 per cent grade and haul 500 lbs. of manure, climb 25 per cent grade and pull disc harrow, plow 7 in. deep and turn a furrow as nice as you please."

:: :: ::

An owner in *Kansas City, Mo.*, considered that the hardest work his Utilitor would have to do would be to pull a 3½ ft. hay mower. Here is what he found: "I had every success with my 3½ ft. mower. It was used in one cherry orchard that was waist high in weeds and another that was in alfalfa. It went right ahead and has put in a 10 hour day with just a break for lunch at work that would have killed a horse."

:: :: ::

Here is a man from *San Francisco* who is getting more out of life—because of this Utilitor he is "Beating the Game." "I have a ten acre orchard and I take care of it with the UTILITOR. I will say that this is the first plowing, etc., I have ever done. I have always lived in the city. The machine is a wonder."

:: :: ::

We thought the Utilitor was easy to operate, but this owner at *Gates Mill, O.*, sheds some more light on the subject. "We find the UTILITOR tractor a wonderful machine, doing the work in tip-top shape. My father-in-law is a man 72 years old and he is the one that runs it, having about 4 acres of land that he is working."

:: :: ::

You will find the Utilitor doing its work well in all parts of the country. From *Baton Rouge, La.*, comes this word of praise: "My Utilitor has given me excellent results. I have made a corn and potato crop with it and have had no mechanical trouble whatever. I consider it a very satisfactory machine for the work in question."

Over in *Rock Island, Ill.*, this owner is raising fruit with the help of his Utilitor. He writes that "I use my UTILITOR on my fruit farm, and am very glad of the opportunity of saying that I am well pleased with the tractor. I have plowed, disced, and harrowed with the tractor and have found it satisfactory and economical in every respect."

:: :: ::

That the Utilitor cuts costs and saves time is explained very concisely by this owner in *Philadelphia, Pa.* He writes: "I have been using UTILITOR and I am more than satisfied with it. My man used to spend three days in cutting my lawn; now he does the same work with the UTILITOR in one day."

:: :: ::

But when manufacturing plants find the Utilitor a necessary part of their equipment we begin to think that the economic value of the Utilitor has never been realized. It proves that you need never have idle or non-productive soil whether you are a farmer or not. A manufacturing plant in *Wichita Falls, Texas*, writes as follows: "We are using a UTILITOR manufactured by the Midwest Engine Company for cultivating our factory grounds and garden, amounting to about six acres. We have found this little tractor and the implements which came with it very satisfactory for our purpose and are glad to recommend it for such work as we are using it."

:: :: ::

We are receiving hundreds of unsolicited letters from Utilitor owners like the above.

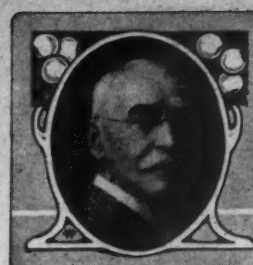
Through them all runs the same note of praise for the universal usefulness of this trustworthy machine and for the Utilitor's dependability and economy of operation.

You need the Utilitor. It has been tried and found more than we have ever claimed for it. We will gladly send our "YES" book of owner testimonials.

DEALERS—Fill out your line with the Utilitor. The universal application of this machine for all manner of farm, fruit orchard, truck, nursery and garden work will make it a profitable addition to your line. There's a market for the Utilitor at your very door. Write for territory franchise application today.

MIDWEST ENGINE COMPANY
INDIANAPOLIS, U. S. A.

MIDWEST
UTILITOR
Depend Power



Charles A. Green's Walks and Talks With Readers

New and Old Strawberries

ONE of the pleasures of my life is visiting the different fruits at Green's Fruit Farm and taking notes of their quality, productiveness, beauty and vigor. Strawberries this year made an excellent showing owing to frequent rains, which seem to be necessary in order to develop this attractive fruit. Without seasonable showers strawberries are apt to be reduced in size and quality.

Sweetheart.—This strawberry was originated by the superintendent of Green's Fruit Farm. It has been considered a variety of great promise. In shape it is elongated with beautiful white seeds, red flesh, good quality. It developed a peculiar characteristic which caused me to stop its propagation. I never knew a variety of strawberry to play such a trick on the originator. The leaves began to turn white, that is became variegated leaved. Variegated ornamental shrubs and trees are considered valuable, but a variegated strawberry leaf is not to be sought for. This is the only objection I see to the Sweetheart strawberry.

Aroma is a roundish berry with white seeds, but seeds not so conspicuous as in the Sweetheart. It is a beautiful berry, quality good acid. Bear in mind that acid strawberries are the most desirable for canning.

Dunlap.—This resembles Aroma. The seeds are not so white. It has the roundish shape of the Aroma. It is an old and highly prized variety. Sweet and good, flesh red all the way through. Valuable for its productiveness. Plants are not remarkably vigorous with me.

Brandywine.—Probably the firmest of all strawberries. Ripens late. Shape more pointed at the tip than Dunlap. High quality, a profitable late variety. A beautiful and valuable strawberry.

Gibson.—Medium late, firm white seeds, good round shape, not so large as others on this list. Quality, high flavored, rather acid, good quality.

New Prolific.—This is a variety originated and introduced by the Geneva Experiment Station. I do not know of any other strawberry introduced by this station, therefore the fact that they introduced it is a high recommend. The Geneva, N. Y., experiment stations say the New Prolific is the most productive strawberry ever introduced, or words to that effect. It is of good, longish shape, seeds white, flesh moderately firm, midseason, large size, productive, vigorous, foliage somewhat liable to rust. It is a most remarkable variety.

Woodrow.—Longish in shape, tendency to white tips, large calyx. The white tips will be a serious drawback. Season medium late. Quality neither sweet nor sour. Not so promising as some of the other varieties mentioned.

Corsican.—This is a variety that I have been particularly interested in for many years. I have considered it the largest of all strawberries. It is medium early in ripening. Seeds small and not conspicuous. Color a beautiful dark red. The plant is one of the most vigorous growers, productive. I have noticed almost every year that some of the blossoms of Corsican are not fertilized and do not produce fruit, which reduces the yield somewhat of this splendid variety. Whether this peculiarity will be noticed in other localities I cannot say. My Dunlaps show the same peculiarity this season. Possibly it may be a lack of honeybees to fertilize the blossoms that causes some of the blossoms to perish without being fruitful, but my beds of Corsican have never failed to yield a good fair crop of the most beautiful strawberries I have ever seen. High quality.

As regards the quality of strawberries, when grown for market the quality is hardly worth mentioning. Nobody pays any attention in the city or village markets to the quality of strawberries. They buy entirely by the impression made upon their eyes. If the berries are large and attractive without white tips they will sell, even though the quality is not quite so good as that of some other varieties. Even for the kitchen garden where people are planting for their own use, quality does not enter very seriously into the strawberry problem in my estimation, and yet there are certain varieties that are superior to others in quality. I have never yet known a strawberry eater to stick up his nose at the quality of any strawberry offered him.

Introducing New Fruits

THERE are few fruit lovers who realize the difficulties or perplexities in introducing a new fruit. The introducer must be a man of wide information. He must know what already exists in the way of varieties and the value of these varieties. He must be a judge of plant vigor and character and productiveness as indicated before the fruiting. After the new variety comes into fruiting he has a serious problem in comparing it with all of the thousand varieties that have gone before and of the thousands of varieties that have been introduced and have disappeared entirely, as the old Wilson and Crescent seedling strawberries have disappeared.

The introducer of a new fruit must select a favorable date for his introduction, when the market is not overcrowded with new candidates. There is every opportunity to lose money in introducing new fruit. I have often paid as high as $2,000 for a new currant. Then the question arises, how many plants should I accumulate before offering the variety for sale? If I accumulate too large a number I meet with a loss, and if I do not have enough stock to supply the demand, I am in a bad fix. Then how shall we illustrate the new fruit and what shall we say about it?

There was a time when almost any announcement of a new fruit would attract attention, but of late years less has been said or heard about new fruits, but it must be conceded that it is desirable that new fruits should constantly be coming on since one new fruit may be worth hundreds of millions of dollars to this country. We need a more thorough and prompt method of introducing a valuable new fruit. As it is at present a new variety cannot be disseminated over such a big country as this under 15 or 20 years.

One of the prominent officials of the Geneva, N. Y., Experiment Station recently called attention to the lack of facilities for introducing a valuable new fruit. He cited one instance, that of the new Hale peach, saying that if this peach could have been tested quickly and planted quickly all over this country instead of waiting 10 or 15 years, millions of dollars would have been added to the receipts for the sale of peaches, as he considered this a valuable variety.

The Complete Dormant Spray

Controls Fire Blight As Well As Scale

DISCARD knife and saw and paint as a remedy for fire blight. Use a dormant spray that will do a *complete* job. Don't be satisfied with a spray material that does nothing more than kill the scale, for scale isn't your worst trouble. Control fire blight, collar rot and other troubles with Scalecide—"*the complete dormant spray.*"

Scalecide kills the hold-over cankers that cause twig and fire blight. It cleanses and disinfects the canker; it causes the old, blackened bark to peel off and new, healthy cambium to form. No other spray will do this.

Scalecide Penetrates and Invigorates

Scalecide is a soluble and miscible oil—not only an insecticide for scale, but it has both fungicidal and germicidal properties. And because the oil globules are broken up into such microscopic particles they are able to penetrate the diseased bark and tissues, and thus reach the bacteria that cause fire blight. Scalecide actually stimulates and invigorates the plant tissues —"*Makes a tree outgrow its troubles.*"

What Scalecide Does

Scalecide kills scale, insect eggs, bacterial diseases and fungous spores that winter over on the bark. It cleans up the trees so thoroughly that their increased vigor is strikingly noticeable the following season. The Fall application controls blight and also kills the adult Pear Psylla before it lays its eggs. Used in the Spring when the buds show green, Scalecide controls aphis too. It's "*the complete dormant spray*"!

You Can't Ignore the Saving in Labor

One barrel of Scalecide does the work of three and a half barrels of lime-sulfur. Eight hundred gallons of Scalecide (diluted 1 to 15) goes farther than 1,600 gallons of diluted lime-sulfur, and of course you can put on 800 gallons of Scalecide in much less time than 1,600 gallons of lime-sulfur. Now, with labor both scarce and high, Scalecide is more economical than ever. You can't afford to ignore this saving.

Scalecide Protects Your Spray Pump

Lime-sulfur eats out the valves and other parts of the spray rig with which it comes in contact. It causes the spray hose to crack and go to pieces. Scalecide, because it is an oil, helps to protect the spray pump from wear and tear and prolongs its life; it makes the pump run easier and develop higher pressure.

It is Pleasant To Use

Lime-sulfur burns the hands and face, often injures the eyes, takes the hair off the horses and eats the harness—it is extremely disagreeable to use. Scalecide soothes the skin, does not injure the eyes, improves the hair on the horses, softens and cleanses the harness—*it is pleasant to use.* There is every reason to use Scalecide.

We Own 26,000 Fruit Trees

For ten years we have been conducting spraying tests in our own large orchards, which now total 26,000 trees. Here we have conclusively proved, on a commercial scale, every claim we make for Scalecide. The most important result of this practical work with Scalecide in our own orchards has been to discover and confirm many valuable properties of Scalecide: its invigorating effect upon the trees; its economy; its effectiveness against fire blight; and its unequaled effectiveness against insects and diseases of all kinds that winter on the tree. When we recommend Scalecide to you, we do so as *fruit growers*—from our own experience.

Get Scalecide Now

If there is a Scalecide Dealer in your section, see him now and ask him to order enough for you. If there is no Scalecide Agent near you, write for booklet, prices and Guarantee; also give us the name of your dealer. Don't delay. Last year fruit growers wanted more Scalecide than we could supply.— Fill out and mail the coupon below today —no obligation. Address Dept. 11.

B. G. PRATT CO. 50 Church Street NEW YORK CITY

Manufacturing Chemists

SCALECIDE

THE COMPLETE DORMANT SPRAY

"Makes a Tree Outgrow Its Troubles"

(Coupon)

B. G. PRATT COMPANY, 50 CHURCH STREET, NEW YORK CITY.

Gentlemen: Please send me prices, copy of Guarantee and free booklet on Scalecide, "Figuring the Cost of Spraying." I hav .....(number) bearing trees: .....(number) young trees.

I have been using .....(number) barrels of .....(kind of spray) My dealer is: .....(Name) .....(P. O.) .....(State)

Name ..... P. O. ..... State .....

11

Cider Makers Require Permit

By Newton Jenkins, Illinois

FROM the number of letters which have come to us in the last few weeks, apple growers are somewhat up in the air as to the conditions under which they will be permitted to manufacture cider this fall, either for home use or for sale. As cider has a bad reputation as an intoxicant, under some conditions, its manufacture and sale comes within the Volstead act, and the conditions under which it may be manufactured is subject to the regulations of the Federal Prohibition Commissioner. The substance of the prohibition law is as follows:

"Section 1. After one year from the ratification of this article, the manufacture, sale or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited.

"Sec. 2. The congress and the several states shall have concurrent power to enforce this article by appropriate legislation.

Sec. 3. This article shall be inoperative unless it shall have been ratified as an amendment to the constitution by the legislatures of the several states, as provided in the constitution, within seven years from the date of the submission hereof to the states by Congress.

It is well known that the Volstead law is the measure by which the Congress of the United States intends to carry into effect the provisions of the 18th Amendment. An interpretation of that part of the Volstead Act as relates to the manufacture of cider is set forth in regulations issued by the office of the Commission of Internal Revenue.

A Permit Required

The manufacture of cider is considered under two heads, viz., cider to be used in the manufacture of vinegar and sweet cider to be consumed as a beverage.

In reference to the former, the following interpretation is given to the law, by the federal authorities:

"All persons desiring to manufacture cider or other intoxicating liquors specified in this article for conversion into vinegar, or to use such cider or intoxicating liquors in the manufacture of vinegar, should file application on Form 1404 prescribed in Article III, setting forth in such application the exact acts for which they desire authorization. After approval, a permit will be issued authorizing the acts stipulated."

Thus it is seen that the manufacture of cider for vinegar purposes requires a permit from the Federal Prohibition Director of the state in which it is to be made as does the manufacture of vinegar. It also will be noted that:

"Cider, manufactured by persons holding permits as above, may be used by them in the manufacture of vinegar or may be sold or furnished by them in quantities of five wine gallons or more to other persons holding permits to use cider in the manufacture of vinegar upon receipt of permits to purchase, Form 1439, and may not be otherwise disposed of.

"Cider containing less than one-half of one per cent of alcohol by volume may be sold by the producer to persons holding permits to manufacture vinegar. If such cider, however, contains one-half of one per cent or more of alcohol by volume when removed for conversion into vinegar, it will be necessary that the persons producing same hold permits to manufacture cider as above provided and furnish same only upon receipt of permits to purchase."

About Sweet Cider

In regard to the manufacture of sweet cider, the regulations are as follows:

"Sweet cider containing less than one-half of one per cent of alcohol by volume may be manufactured and sold without the necessity of obtaining permit, provided such product is put up and marketed in sterile closed containers or is treated by the addition of benzoate of soda, or other substance which will prevent fermentation, in such proportion as to insure the alcoholic content remaining below one-half of one per cent of alcohol by volume. The responsibility for keeping the alcoholic content below such percentage rests upon the manufacturer, and in any case where cider is found upon the market containing alcohol in excess of the allowed percentage the manufacturer will be presumed to have manufactured and sold an intoxicating liquor.

"In the manufacture of cider, sugar or other fermentable substances should under no circumstances be added to the apple juice for the purpose of increasing the alcoholic content, inasmuch as such practice is held to constitute the production of a mash fit for distillation within the prohibition of Section 3282, Revised Statutes."

Great stress must be laid upon the provision that the manufacturer is held responsible for the alcoholic content of the cider he makes. Fruit growers must be careful about this. Though a fruit grower may make cider and sell it while it still contains less than one-half of one per cent of alcohol, if fermentation set in afterward, he is liable under the law. A farmer making sweet cider for commercial sale may treat it in one of two ways. He may pasteurize it or he may treat it with benzoate of soda. If he does the former, it remains non-alcoholic as long as it is bottled and yeast germs are not allowed to get into it. But if it is opened and yeast added and it becomes alcoholic, then the manufacturer of the cider is liable. Thus the law prohibits the sale not only of alcoholic drinks but also those which are partially alcoholic. The only safe plan to adopt is to add the right amount of benzoate of soda and thereby prevent any possible further fermentation.

"Nonintoxicating in fact"

A recent ruling issued by the Federal Prohibition Commissioner is very interesting relative to the manufacture of cider for home consumption. It is as follows:

"Section 29 of Title II of the National Prohibition Act provides that the penalties imposed in the act against the manufacture of liquor without a permit shall not apply to a person for manufacturing nonintoxicating cider and fruit juices exclusively for use in his home, but such cider and fruit juices shall not be sold or delivered except to persons having permits to manufacture vinegar.

"'The Bureau's interpretation of the foregoing provision is as follows: Any person may, without permit, and without giving bond, manufacture nonintoxicating cider and fruit juices, and in so doing he may take his apples or fruits to a custom mill and have them made into cider and fruit juices. After such nonintoxicating cider and fruit juices are made, they must be used exclusively in the home, and when so used, the phrase "nonintoxicating" means nonintoxicating in fact and not necessarily less than one-half of one per cent of alcohol, as provided in Section 1, of Title II, of the said Act.

"Or if the person making such cider and fruit juices desires to do so, he may (1) sell such cider and fruit juices at any time to persons having permits to make vinegar; this he may do under the provisions of said Section 29. (2) If he preserves such cider and fruit juices at the time they are made, he may sell same to the public in general; this he may do under the provisions of Section 4, of Title II, of said Act. (3) Or he may sell said cider and other fruit juices so long as they contain less than one-half of one per cent of alcohol, but the purchasers thereof cannot use or possess the same after they contain more than one-half of one per cent of alcohol; this he may do under the provisions of Sections 1 and 3, of Title II, of said Act.

"The cider in the home may be allowed to turn to vinegar if the owner desires, provided he adds no sugar or other fermentable substance to the cider or fruit juices to increase the alcoholic content thereof, inasmuch as such practice is held to constitute a mash fit for distillation within the provisions of Section 3282 Revised Statutes; he may sell said vinegar

(*Continued on page 38*)

REPUBLIC TRUCKS

REPUBLIC
Yellow Chassis
TRUCKS

Ship by Truck

Republic owners have distinct advantages in performance and service. The first is assured by dependable, standardized construction. The second is made positive by the maintenance of two thousand fully equipped Service Stations and seven National Parts Depots. Superior performance and superior service, combined, give Republic Trucks undisputed leadership throughout the world.

Republic Truck Sales Corporation, 934 Michigan Ave., Alma, Michigan

Some of Uncle Sam's Hired Men

By Dixon Merritt, U. S.. Dept. of Agriculture

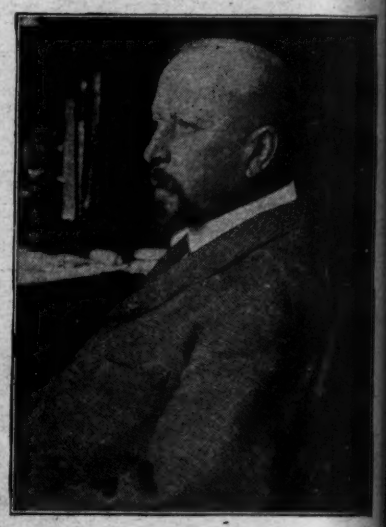
One of a series of articles running in co-operation with the U. S. Department of Agriculture, to acquaint our readers with the type of men who are making possible the wonderful service the department is rendering and stands ready to render our readers.

HALF a billion dollars a year is a pretty big estimate to put on the value of a man's services, but Dr. L. O. Howard, Chief of the Bureau of Entomology of the United States Department of Agriculture, is worth that to the farmers of the United States. That is my estimate. Estimates from different sources vary. Dr. Howard himself—a conservative man and modest—is inclined to put it at about a hundred million. Here is the basis of my own estimate: Insects annually destroy about 10 per cent of the possible production of crops in the United States. If it were not for the general use of remedies found by the Bureau of Entomology, the loss would be 20 per cent. The difference between 10 per cent and 20 per cent of the crops of the United States is a billion dollars, easily. Then, just to be conservative, I cut that in half, and call it the annual value of Dr. Howard's services.

You see, I am using "Dr. Howard" and "the Bureau of Entomology" as interchangeable terms. That is not scientifically accurate and Dr. Howard would object to it, but all the other people in the bureau would be inclined to let it pass. He has been there so long—42 years—and has been so closely associated with all the work of protecting farmers against insects that one is justified in thinking of the bureau in terms of Howard.

The people who work with him say that Dr. Howard is the most exacting man in the world—with himself. With everybody else he is almost the opposite, they say. His men must get results, but Howard does not waste any time quibbling over methods. And yet, perhaps there is a good deal of method in that trait of his. It has the effect of encouraging personality, of developing men who do things more effectively by impressing their individuality on the work. Somebody said of Dr. Howard a good many years ago that his work had less of academic assumption than any other scientific bureau in the government. Dogma finds no place in his thought. He does not believe that it is any of any man's business how any other man thinks.

When Dr. Howard came to the Department of Agriculture 42 years ago, economic entomology was not sure of its social position among the sciences. Other sciences looked upon it askance.



Dr. L. O. Howard

Men were inclined to feel that entomologists partook of the diminutive nature of the creatures they study. That is not true now and has not been true for a good many years. Dr. Howard says, modestly, that he has "probably helped the appreciation of economic entomology as a scientifically based thing among other scientific men." Other scientific men say that Dr. Howard, by his work in the Department of Agriculture, has been the dominating force in making economic entomology a great science and recognized as such.

I suspect, however, that the value of the science is not yet thoroughly understood by people generally. Let me point out a few things that have been accomplished by one of Dr. Howard's specialties—the study of the parasites of insect pests.

The fluted or white scale of California was inflicting tremendous injury upon the citrus-fruit industry. The Department of Agriculture introduced from the Orient a lady-bird beetle, a natural enemy of the scale. The result was the speedy reduction of the scale to negligible numbers and the saving of the citrus industry of the Pacific Coast.

Nearly 50 years ago, an instructor at Harvard had a fad for moths. Entomology was not his work, but he was playing at it. He had imported a number of moths and caterpillars from Europe. A storm destroyed his netting enclosure and liberated some of the caterpillars. Twenty years later the gypsy moth progeny of some of those escaped caterpillars having increased unnoticed till that time, appeared as a pest and threatened the destruction of orchard, shade, orna-

(Continued on page 31)

A Man in Boston Ate an Apple from Oregon

THE man gave five cents for this apple and thought he was giving just what the grower asked for it. The grower, in turn, thought he got for this apple just what the man was willing to pay.

As a matter of fact, both were wrong. Two mysterious factors, Supply and Demand, determined just what the man should pay and just what the grower should receive.

There are in this country approximately 10,000 carlot markets, and supply and demand are working in each of them, determining what the public shall pay, and what the growers shall receive for their fresh fruit and vegetables. Prices are fixed by circumstances. The only way to stabilize prices is to control these circumstances.

The American Fruit Growers Inc., through its widespread connections and highly specialized sales and distributing organizations, is in a position to control these circumstances to a great degree. This service it offers to growers.

When you distribute through the American Fruit Growers Inc., you are assured of two very important things. First, you are assured of getting your product to a welcome market, with despatch, and in good condition, because our daily knowledge of market conditions enables us to find the ready buyer, and our facilities for prompt handling, with inspection enroute, assures tip-top condition on arrival.

Second, you are assured of getting high average and prompt returns through our personal representative at destination.

By means of our branch houses and salaried representatives throughout the country we can offer your products daily, in every carlot market in the country. We can secure for you F. O. B. sales. And we keep you advised as to market conditions at all times.

Any way you figure it, you could not add a greater vitalizing force to your business than the services which the American Fruit Growers Inc. has to offer. At the same time it relieves you of selling worries, it eliminates risks, and assures you of better and quicker returns.

Once you have availed yourself of our services you will plant, year after year, with the full knowledge that you will obtain favorable sales.

Our rates are on percentage, but always framed to meet your actual requirements. Write today and let us tell you more in detail of what our service consists.

American Fruit Growers

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How a Motor Truck Helps

By J. B. Edwin, Oklahoma

AN OKLAHOMA farmer in telling why he liked his motor truck, said it didn't kick at him when he went in the barn; he didn't have to go out before breakfast and curry and feed it; he didn't have to worry about it getting frightened at the train and running away with him; he could leave it standing in the street without any danger of having a runaway if anything unusual came along while he was gone.

There are many other reasons he could have given in favor of a motor truck. He doesn't need to worry about hurrying it on a hot day, or feel sorry for it when standing out in the rain or snow. If it gets sick, which it will sometimes, he doesn't need to sit up with it at night, unless he must have it first thing the next morning.

The horse is a faithful animal and he still has his place, but that place is not any more as an engine transportation on the road. The world moves, and if we don't move with it we are very likely to get tramped on, or to speak more properly, get run over by the gasoline engine.

The Fast and the Slow

For example, here are two men living on adjoining farms. They both have large peach orchards and they are 25 miles from a good market in one direction, 20 from another and 30 from another. The one man gathers a load of peaches and starts to market early in the day. He has no truck, but goes with his team. He reaches the town 25 miles from his home late in the day. The market is overstocked. His fruit already has been in the crates for 24 hours or more, and been in the sun and dust for several hours and been jolted over the road in his wagon. His fruit is practically unmarketable because by the following day it will have seriously deteriorated in quality, so he must either take what he can get and then either stay all night in town or spend several hours driving his tired team home again.

The neighbor owns a good motor truck. He loads his truck late at night and then starts early in the morning for the town 25 miles distant. By the time the city people are out of bed and down to the market looking for fresh fruit, Mr. Farmer No. 2 is there with his truck load of peaches looking almost as fresh as when picked from the tree the day before.

If he should find the market glutted and the prices down, he can call up dealers in one of the other towns and maybe find that peaches are in good demand there that day at good prices. And before noon he can drive the additional distance, get more money for his load and still be back home before his neighbor has much more than reached the town he set out for in the morning.

Fifteen miles means four or five hours to the man with a team and a wagon load. It means one hour to the man with a motor truck. There are men who can't afford to buy a truck and men who do not have enough use for a truck to justify the investment. But the interest on the investment is not a big item, and when a truck is not in use it is costing practically nothing but the interest on the investment, provided it is properly cared for.

Community Hauling

But supposing a farmer feels that he does not have enough use for a motor truck to justify the investment. In that case he probably is not so busy that he can't use his truck in doing hauling for some of his neighbors who do not own a truck for the very same reason. He can make a great saving in his own transportation and earn money from his neighbor and at the same time make money for his neighbors.

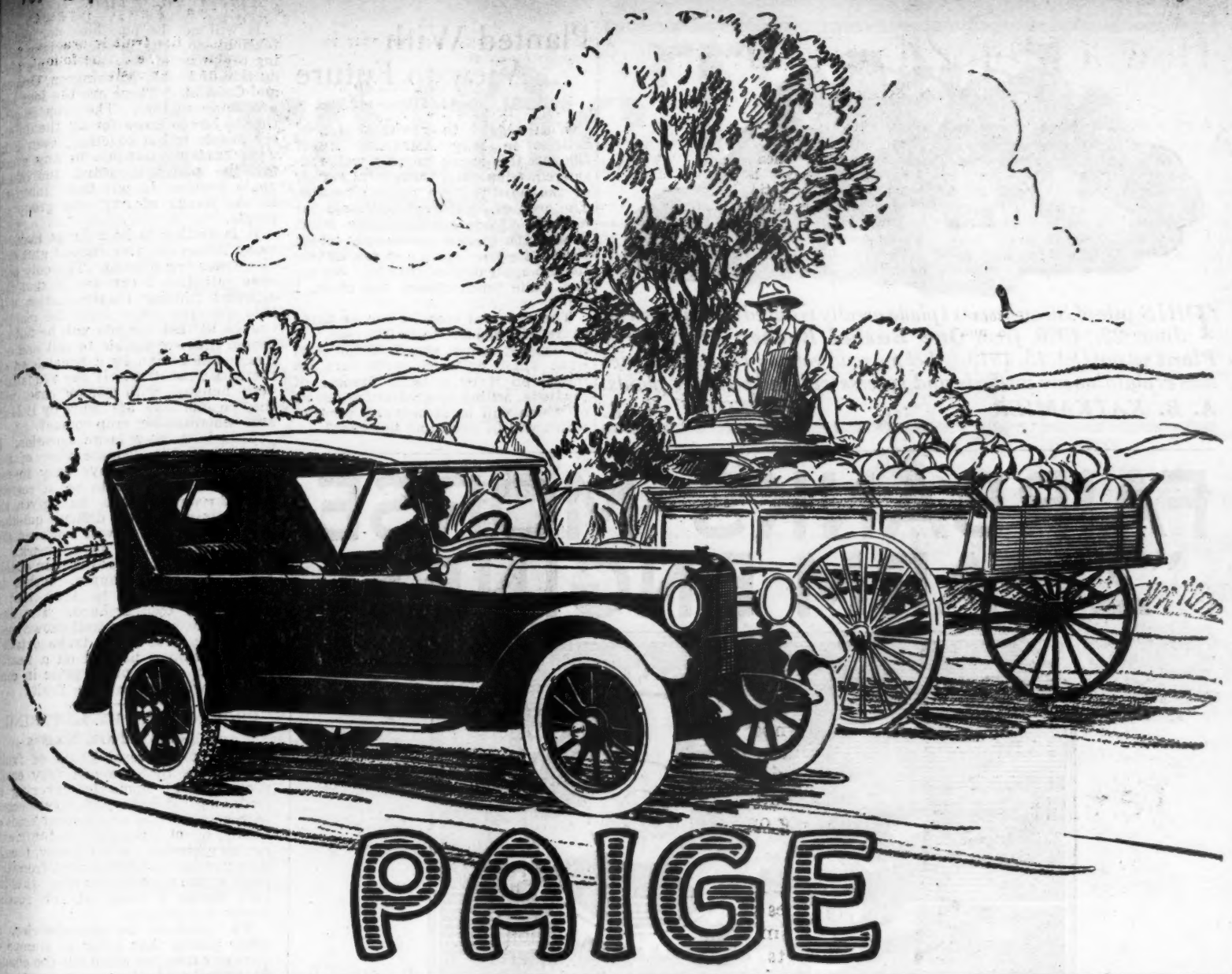
I would not recommend the joint ownership of a truck by two or more farmers any more than I would recommend the joint ownership of a team. But one truck in a neighborhood can serve two or more farmers and all of them be benefited. But before the motor truck can be all it ought to be for the farmer, we must have good, hard surface roads. The good roads movement has received a great impetus it is true, but we have only made a start as yet. It is possible to drive a truck over almost any road that is passable by team with a load, but speed cannot be made even with a truck over poor roads.

A recent test in Michigan showed with a two-ton truck an average speed of 4.6 miles per hour over dirt roads, 9.5 miles over gravel roads and 16.4 miles per hour over concrete roads. Another test showed that it took about twice the amount of gasoline to take a loaded truck over dirt roads as it took to cover the same distance on concrete roads.

It is plain therefore that we cannot afford poor roads. If there is any one class of men who should be good road enthusiasts, it is the farmers. With good roads in all directions, every farmer should either own a motor truck or have one available with which to market his products.

FRUIT YIELDS IN YAKIMA

The average number of boxes of apples per tree, produced by approximately a million and a quarter apple trees in the Yakima valley during a six-year period was 3.31, according to the latest report of the horticultural commissioner of Yakima county, Wash. During the same period the average yield of each bearing pear tree in the county was 1.9 boxes. The average peach tree, of which there was approximately 300,000 in bearing during the six-year period, produced 6.19 boxes. Plums and prunes averaged 96.04 pounds per tree, and cherries yielded 75.85 pounds per tree.



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Its six-cylinder motor is a product of unusually high refinement, reflecting in every particular the standards of precision and accuracy developed by the war. And, in body and chassis also, it is a striking example of twentieth century progress in both design and construction.

The Paige Glenbrook is, therefore, in every sense of the word, a strictly modern achievement representing the best that automotive engineering has ever produced in the building of light sixes.

We ask that you give this due consideration before deciding upon your next motor car purchase. If you value true efficiency and dependability in a motor car, your choice will undoubtedly be a Light Six Paige.

PAIGE-DETROIT MOTOR CAR COMPANY, DETROIT, Michigan

Manufacturers of Paige Motor Cars and Motor Trucks

Planted With View to Future

By L. M. Marble, Pennsylvania

With regard to Professor Lewis' articles in May AMERICAN FRUIT GROWER this seems to me a well considered, temperate, thoughtful review of the northwestern apple situation. The crop of 35,000 cars oversold the market. Other considerations aside, it was the market oversupply which forced the price down and caused loss for the apple deal of 1919-20. No one has made much money out of it, I think.

The expected crop in two or three years will amount to 50,000 cars. If the market cannot absorb 35,000 cars, what will it do when 50,000 cars are forced on it by a large number of separate selling organizations, some of which will be strong and some of which will be weak and ignorant?

It will not be possible—nor reali feasible—to unite in one common sel ing organization the entire apple pro duction of Idaho, Washington, Oregon and Colorado. These are the four bi producing centers. The crop is get ting to be too large for all the differ ent people to get together, even if were humanly possible in any event for the many thousand individual apple growers to put their interests in the hands of any one group of people.

It is getting to be a large market many influences, tremendous glut and disastrous low pricing. The only pos sible salvation I can see is that the deficient railway transportation will hold the crop away from the market enough so that the loss will be felt by people who are unable to sell and de liver, rather than by a breakdown of the entire industry. If the roads last year bungled with 35,000 cars, will they be able to do any more by 1924 or 1925 when the big crop comes?

This is a very large question. I have a very inadequate view of the situation. It is always easy to see difficulties and hard to see a correct way through. Lewis has given an ideal solution for the difficult question but I don't think it will work out the way he would like to have it work.

It was with a full realization of this condition of the apple market to eventuate in 1925 to 1930 that I planted my own orchard. The time will not come when a well-grown east ern apple, free from transportation expense, cannot be sold on a nearby market at a fair profit price in com petition with the western fruit.

PROPAGATING BY LAYERING

By Lewis Hillara, Kansas

There are several kinds of fruits and shrubs that we can very easily propagate at home by layering or mounding. I have had good success with gooseberries and several kinds of shrubs by this method, and currants can be rooted in the same way, though they are not so hard to root from cuttings as are the gooseberries. It is the best means I know of for rooting hardy hydrangeas.

To prepare the gooseberries, or other plants that grow in clumps of slender canes, we clean out the clumps in the fall after they are dormant, and then it is well to cut a V-shaped notch in one side of the strong canes we wish to root, not cutting more than half through. Just cutting the cane half through from one way, slanting upward is practiced and works well enough, especially if the cane is bent so as to open the slit a little. Some do not cut at all but bend the canes sharply and fasten in this shape, but I have had best success with the cutting notches.

After preparing the clump thus, the next thing is to bank carefully with a mellow soil that is well pulverized so it will be firm around the canes and keep the cuts moist. During the winter the canes will callous where cut or bent, and roots will form here during the next growing season. By fall they will be strongly-rooted plants and can be divided and transplanted either in the fall or the next spring.

Use Only Strong Canes

While it is possible to root a large number of the canes of a good clump, the plants will be better if only the stronger ones are used. Many of the weaker ones can be cut away before layering so the strength of the plant can go into the selected canes. Some of the canes can be left to grow naturally, and these will not be very likely to root, and will renew the old clump. Sometimes canes will root if not cut or bent, but the conditions must be ideal to secure this. It is much surer to prepare as suggested.

Grapes and rosebushes can be rooted in the same way, only we have to bend down the canes and stretch them along on the ground. I have seen several fine plants grown from one long grape cane, and also from a crimson rambler rose. In both cases I have cut the canes, but I have seen grapes rooted without cutting, rooting at each joint.

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4,000 LBS. CAPACITY

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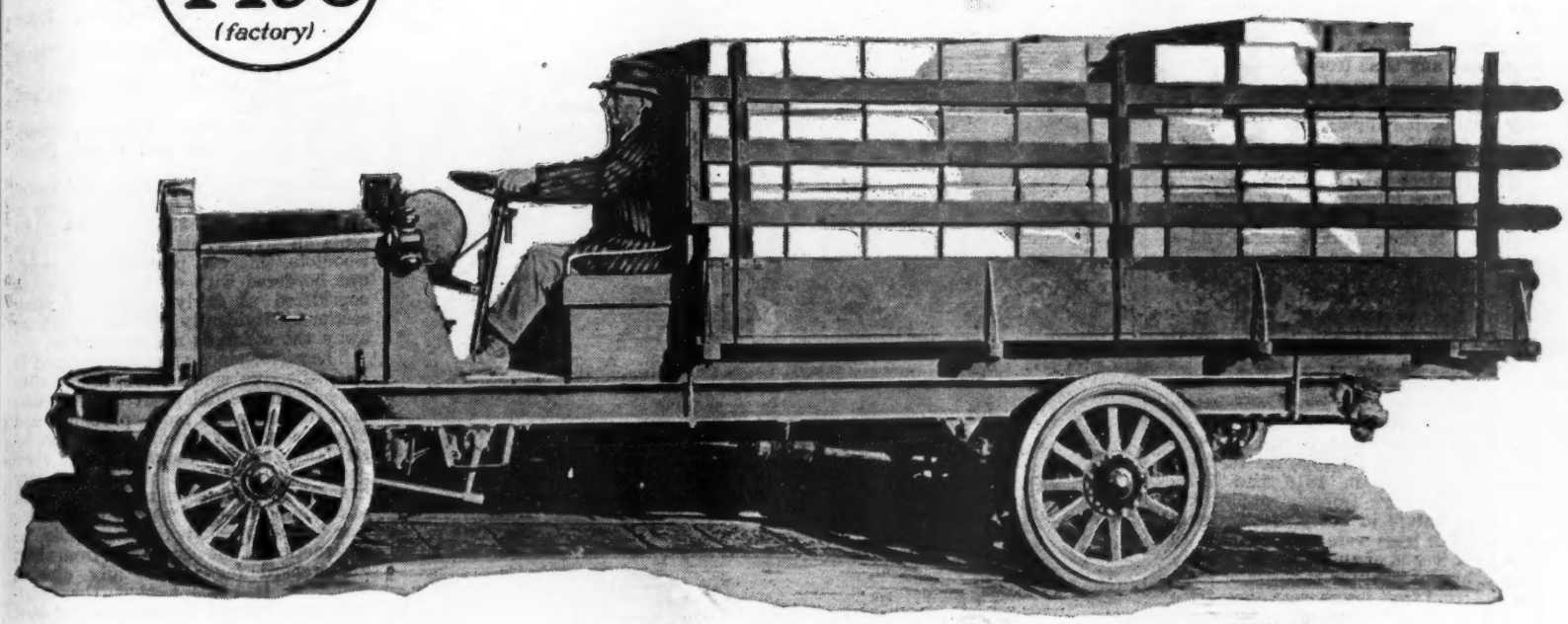

Mr. H. C. Stedman in the state of Washington hauls his entire apple crop from a 25-acre orchard with this one Traffic Truck, which he owns and drives. Thousands are in use and saving half the cost of hauling with teams for their owners.

When you realize that the largest factory in the world devoted to building 4,000-lb. capacity trucks only, is now producing a Traffic Truck every ten minutes to fill its orders, it isn't hard to arrive at the reasons why the Traffic has found favor with fruit growers and ranchmen. It is the most popular motor truck on the market today.

Specialization and standardization have made a superior service possible to Traffic owners. Quantity production of 4,000-lb. capacity trucks of one size and model only have made its remarkably low price possible—***the lowest priced 4,000-lb. capacity truck in the world.***

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"Horse Sense"

Instead of measuring the worth of a motor truck by its price—measure the price by its worth.

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Facts are the "eye-teeth" of truth—those who realize the wisdom of sticking to them have "horse sense."

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"Investigate before you buy" is synonymous with "look before you leap."

Largest Exclusive Builders of 4000 lb. Capacity Trucks In The World

Cedar Trees a Great Menace to Apples

By Ross B. Johnston, West Virginia

THE handsomest tree on many a country estate is the red cedar. It is among the best known ornamental trees and it graces countless landscapes. Now arises the question whether the cedar's menace to apple trees makes necessary its complete destruction.

The cedar tree has long been known as the host of the cedar rust, a disease which often kills many twigs on the cedar trees. Little seems to be known as to the exact manner of this cedar tree infection, and the conditions which bring it about. The well known "cedar apples," frequently clustering thickly on the cedar branches, produce the myriad of tiny spores that are released early in the spring. As the development of the spores depends upon moisture and suitable temperature their release may be almost any time from April to June. These spores are carried by the wind and find a very satisfactory new home on any neighboring apple trees. The result is the common rust of apples, which affects both fruit and foliage.

The greatest injury to apple trees is due to foliage infection. A severe rust results in deformed small fruit, a general reduction in the size of the crop and a great loss of vigor on the part of the tree. Infected leaves fall early. There is a very distinct relationship between the number of rust spots on a York Imperial apple leaf and the length of time the leaf is retained by the tree.

Apple Rust Is Costly

The apple rust has been reported in 37 different states, varying in virulence according to season and climatic conditions. In West Virginia, the rust was extremely severe in 1910 and 1912. The crop of York Imperial apples was an entire failure in every orchard as a result. The trees were well loaded with fruit, but it was of such inferior quality that it hardly paid for the cost of picking. Actual fruit losses were often from $2,000 to $3,000 per orchard and one county in the eastern panhandle of West Virginia lost $75,000 from the apple rust. Virginia reported a loss of half a million dollars in 1912 and these losses did not take into consideration the factor of impaired vitality. In some sections, the loss had been as heavy from the rust as from San Jose scale or black knot.

The three conditions for severe rust infection are: a susceptible variety of apple, a certain degree of warmth and a suitable amount of moisture. In a very dry season there is no serious rust epidemic because the water is lacking. This was the case in 1911 when some people deluded themselves with the idea that the cedar rust had died out. These people were disillusioned when the moist season of 1912 brought on the worst epidemic in years. The reason for the orchards being so free from cedar rust in 1911 was the fact that very little, if any, rain fell during the time the sporidia from the cedar tree were capable of germination. Ordinarily May has sufficient rain to insure germination of the sporidia.

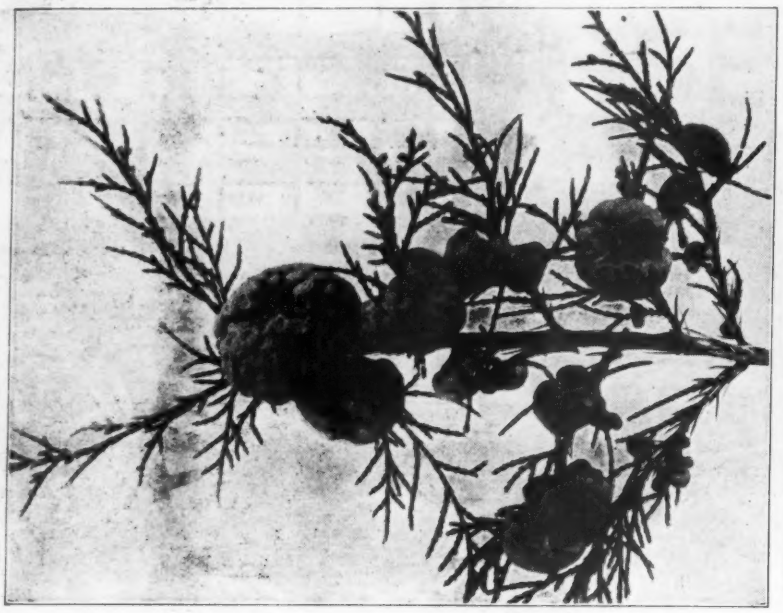
Persons who may be inclined to doubt the possibility of apple rust disease coming from the red cedars need only be referred to a number of well-known instances in Nature of the same kind of infection. Thousands of dollars are spent yearly in the eradication of currant and gooseberry bushes because they are known to harbor the white pine blister rust. Campaigns are now being conducted to wipe out the barberry bushes since the black rust of wheat has been traced to them. In New England, where "quince honey" is a delicacy in so many homes, the red cedars have been found guilty of causing quince rust, ruining much of the fruit.

Destroy the Cedars

A few patient persons have suggested picking off the "cedar apples" from the cedar trees, but this idea has never met with any popular response as the task would be an impossible one except in cases where there might be a few lone trees that were of special value to the owner.

The destruction of the red cedar has been universally recommended as the best and most practicable method of controlling apple rust. Virginia, West Virginia and a number of other states are quite agreed on the necessity of cutting down the cedars and waging relentless warfare upon them. Dr. L. R. Jones of Vermont, one of the most noted plant pathologists in this country, says:

"In the fall and winter of 1891-92, the red cedars were all destroyed in an orchard, and for a radius of one mile around every cedar was uprooted. The result was magical. In former years, many of the apple trees were simply defoliated by rust in August. The past year not a rusted leaf was found in the entire orchard. The moral of this is plain. Red cedars should not be allowed to grow in or near an apple orchard. From the scientific standpoint, the result is interesting as indicating that this fungus is not perennial, and that the occurrence of the rust on the apples is dependent upon annual reinfection from the red cedar." It should be noted here that the red cedar is not reported as a common tree in Vermont. Therefore, when such satisfactory results were obtained from the destruction of the trees within one mile, another circumference around the orchard of two mile radius might have contained few additional cedar trees. This is to be noted in comparison with West Virginia's experiments which showed that a region having many cedar trees should be cleared for a distance of at least two miles in all directions about an orchard.



Red Cedar Branch Loaded With Cedar Apples Just Before the Spore Masses Open

The sentimental value of the cedar must be taken into consideration when dealing with a problem of this kind. Although the cedar commonly occurs in many fruit-growing sections, it is of little commercial importance in most states. The larger trees are sometimes used as fence posts and telephone poles, but red cedar is seldom used as saw timber.

It is the sentimental value frequently attached to cedars around country homes or on big country estates that is often the factor of greatest importance, and is often more difficult to deal with than mere commercial value. However, there are very few places where the value of an apple orchard does not many times outweigh the actual value of all the red cedar trees to be found within the range likely to produce rust infection.

Virginia and West Virginia found out all these things when investigating the relationship between apple rust and cedar trees. Virginia made many efforts to have the cedar tree listed as a pest and legislation has been sought to bring about its destruction where it is a menace to orchards. Many instances have been found in which the owner of cedars has refused to cut or even to sell the privilege of cutting cedar trees which are of no commercial value whatever. Often these cedars are mere bushes, but may produce infective material causing thousands of dollars' damage to apples.

In the absence of legislation against the cedars, a campaign of education has been started in hopes of creating proper sentiment to bring about their ultimate complete destruction. Property owners, who want to plant evergreens, are being encouraged to substitute white pine or spruce. The damage of the cedars to apple orchards is being constantly emphasized. Their guilt is no longer doubted. The disease is not found except in regions where both apples and red cedars grow. The connection between the cedars and the apple rust is quite conclusive.

Spraying for Rust

West Virginia and Virginia carried out experiments of the relative effect of sprays in controlling the rust over a number of years. These experiments were in dozens of different orchards and on thousands of apple trees. West Virginia found that a spray application one week previous to infection is ineffective for control of rust, while the same material applied one day previously is fairly effective. The only time that spray could have been effectively applied for the control of apple rust in 1914 was when the trees were in bloom, so York Imperial trees were sprayed in bloom, with lime-sulphur, without arsenical poison. There was no evidence that the lime-sulphur spray was injurious to bees visiting the blossoms after this spray had been applied. Trees sprayed, when in bloom, had heavy crops of apples.

In one case seven spray applications were given in 32 days, beginning when the blossom buds were pink. Commercial lime-sulphur was used. The first four applications were made on schedule time, and there had been no infection of importance, but on the day set for the fifth application there was a heavy rain. This rain resulted in severe rust infection, by washing most of the previously applied spray from the foliage. The trees were sprayed again on the following day, but the infection for that period had already taken place, and there was no further infection that summer. The sprayed portions of this orchard did not show quite so much rust as the unsprayed trees, but the amount of protection was far from sufficient to warrant the expense and trouble.

This particular experiment is an especially good illustration of why spraying is not effective or advisable for commercial orchards. Rust infection follows rain as a rule so closely there is no chance of spraying again and protecting the apple tree.

Thus while it is entirely clear from the numerous experiments in both Virginia and West Virginia, that apple rust can be readily controlled by the common spray mixture such as lime-sulphur, paste sulphur and Bordeaux mixture, it is equally evident that such spraying for rust control is absolutely impracticable for the commercial orchardist.

From the data collected from a number of sources, Dr. N. J. Giddings of the West Virginia experiment station, ranks as a number of the leading apple varieties as to susceptibility as follows:

Susceptible—York Imperial, Rome Wealthy and Jonathan.

Moderately susceptible—Ben Davis and N. W. Greening.

Resistant—Black Twig, Grimes and Maiden Blush.

Immune—Baldwin, Winesap, Arkansas Black, Stayman and Yellow Transparent.

Accurate records show that the cost of clearing the cedars from 1,114 acres in West Virginia was $552 or less than 50 cents an acre. This acreage represents woodlots, thickets, pastures, and meadows bordered with cedars, and may be considered as fairly typical of many sections. Evidently the cost of clearing away the cedars is not prohibitive.

Therefore, since spraying is found to be ineffective since the spray is often washed off the foliage at the very time that infection is most probable, and experiments have shown that the destruction of the cedars around apple orchards is effective and is not very expensive, there seems to be no question of the importance of waging unremitting war upon the red cedar. While the destruction of the cedar trees from about an orchard for almost any distance helps, it is evident that the cedar-free zone should be extended at least two miles to get satisfactory results.

MEETINGS FRUIT MEN ATTEND

Mississippi Valley Apple Growers' Association, Louisiana, Mo., December 1.

American Pomological Society, Columbus, Ohio, December 1-3.

Annual Fruit Show of Vermont State Horticultural Society, Rutland, Vt., November 17-19.

Third Annual Mid-West Horticultural Exposition, Council Bluffs, November 15-20.

Eastern States Exposition, Springfield, Mass., September 19-25.

Seventh New England Fruit Show, Hartford, Conn., November 5-9.

Peninsula Horticultural Show, Wilmington, Del., November 30 to December 2.

New Jersey Horticultural Society, Chalfonte Hotel, Atlantic City, December 5-8.

Indiana Apple Show, Indianapolis, Ind., November 15-20.

Horticultural Festival, Ohio State University, November 11-13.

Sixth Annual Tractor Show, Ohio State Fair Grounds, Columbus, Ohio, February 7-12.

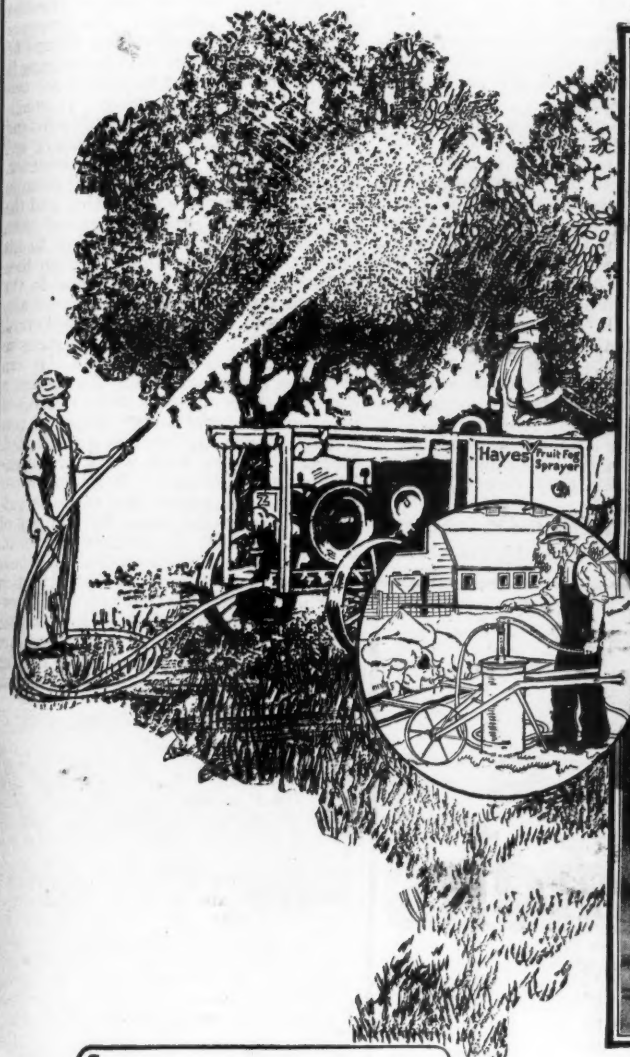
Western North Carolina Apple Show, Asheville, N. C., Oct. 26-28.

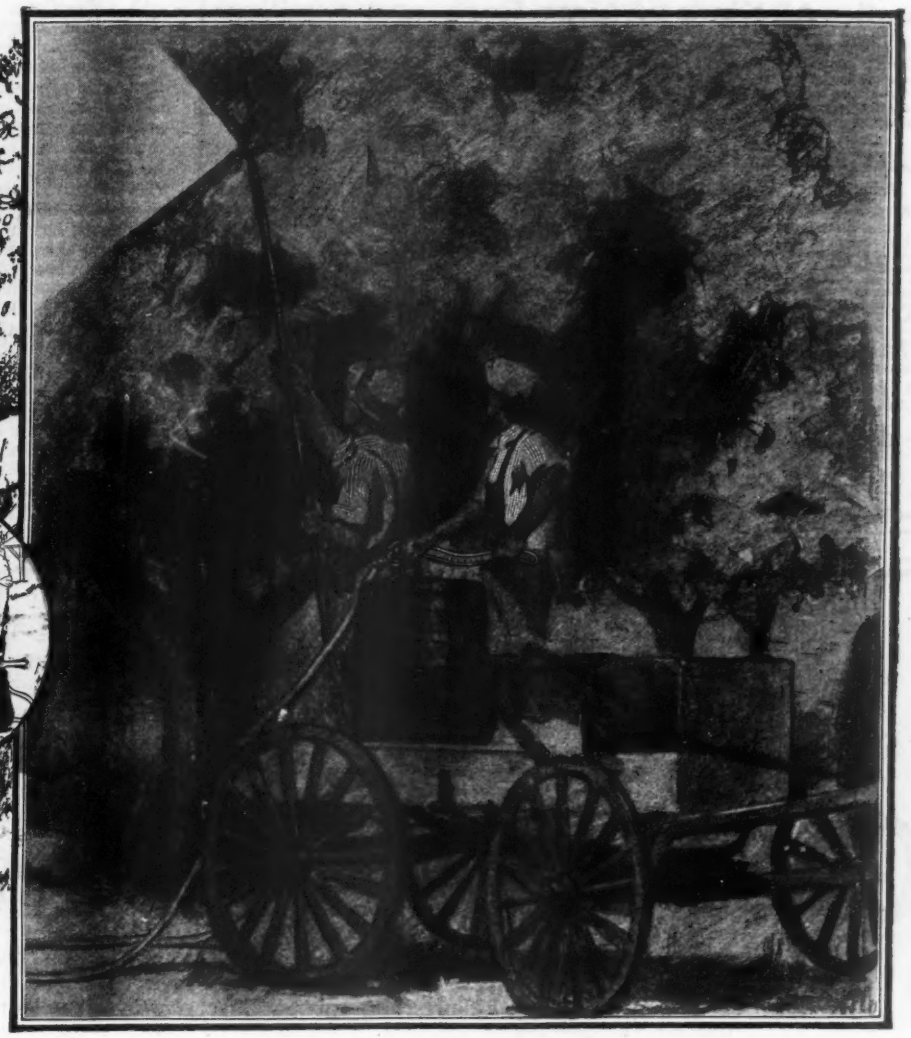
California Fruit Growers' and Farmers' fifty-third convention, Nov. 9-11 at place to be determined later.

National Canners' Association, Baltimore, Jan. 17-21.

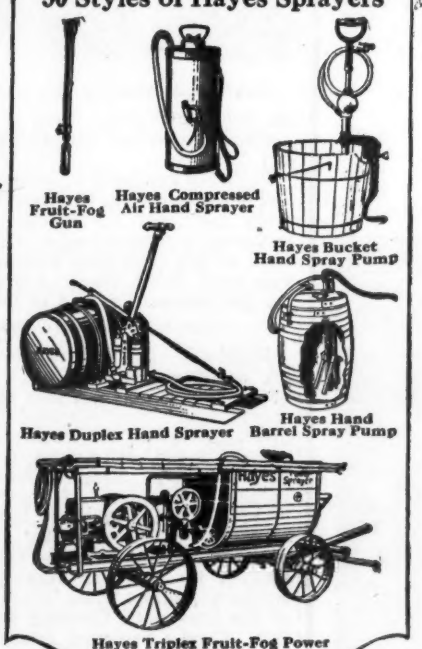
Through the efforts of the Michigan State Farm Bureau, a national association of cherry growers has been formed.

The Bureau of Mines has sounded a warning that there may be a shortage of gasoline before the end of next summer, because of the great increase in the number of automotive vehicles. During the month of March, 44,000,000 barrels of gasoline were consumed in the United tSates, which is more than the entire world used in the whole year of 1885.





50 Styles of Hayes Sprayers



Look Out *for* Crop-Destroying Pests

FRUIT growers and farmers now know that the day is past when they can raise good fruit without spraying. They know that unless they kill vicious, crop-destroying pests their orchards will wither and die.

They realize that to go on producing unmarketable apples, blight-eaten pears and imperfect fruit is decidedly not business. Their own losses and the terrible losses of thousands of other fruit growers and farmers positively prove this.

That is why they are today protecting their apples, peaches, pears, plums, citrus and other fruit from the ravages of San Jose Scale, Codling Moth, Scab, Blotch, Bitter Rot and other deadly life-sapping diseases and pests.

This also explains why they are protecting their potatoes, hogs and poultry from disgusting, tormenting bugs, lice and mites.

No matter whether you raise fruit or hogs, potatoes or poultry — or any other living thing — you should not fail to send the coupon and learn how spraying will stop your costly losses from pests.

Learn why the Hayes System of Fruit-Fog Spraying is of such vapory, fog-like *fineness* that it has unusual penetrating and adhering power. Why it is quicker, more thorough — saves time, solution and money.

Hayes Fruit-Fog Spraying envelops everything like a mist — works into even the microscopic crevices and niches—kills the millions of *hidden* unseen pests, which no ordinary coarse spray can possibly reach.

This amazing *thoroughness* explains why Hayes spraying often adds 500 to 5000 per cent to profits each year. It explains why Hayes spraying is pronounced a wonderful success by experts, fruit growers and farmers everywhere.

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Tell us what you want your sprayer to do, and we will tell you which of the fifty styles of Hayes Sprayers is best suited to your needs; and its price. We will also send the new Book of Hayes Sprayers and Valuable Spraying Guide FREE.

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Please send FREE and without obligation, your Big New Book of Hayes Sprayers and your Valuable Spraying Guide.

Number of trees..... Average age.....

Other uses .....

Name .....

P. O. .....

State..... R. F. D. .....

The Wax Moth in Apiaries

By Frank C. Pellett

A NUMBER of letters have reached me from beginners who state that the wax worms have destroyed their bees and they ask for information as to how to prevent repetition of similar injury.

The wax worm is the larva of a small gray moth or miller that looks much like hundreds of other moths to be seen flying about. The adult moth creeps into the hive and lays her eggs in some convenient crevice. When the eggs hatch, the tiny larvae burrow into the combs, where they live by feeding upon the wax of which the combs are composed and upon the pollen which the bees have stored in the cells. As they grow larger, they become voracious feeders and rapidly destroy the combs, if left undisturbed. When fully grown, these larvae are more than an inch in length. At this time they spin cocoons in which they pass the final period of transformation and from which they come forth as adult moths.

Moths Trouble the Novice

Moths are a source of great anxiety to the novice, but the least of troubles to the expert beekeeper. The presence of moths in the beehive can always be accepted as evidence that something is wrong. In other words, moths are evidence of poor beekeeping. If conditions are right, the bees readily defend the hives against these intruders and no harm comes from their presence. It is only the weak or diseased colonies that fall a prey to wax moths, and the good beekeeper guards against such conditions by careful attention to his bees at the proper time. Italian bees defend themselves better than do the black or common bees. They are also gentler and better honey gatherers, and for these reasons most extensive beekeepers keep Italian bees. It can be taken as a safe rule that when a colony of bees appears to be destroyed by moths, something serious was wrong before the moths got started. Either the bees were weak or queenless, or else diseased. If given proper protection for winter and there is sufficient food in the hive, the danger of such conditions is greatly lessened. Usually, when old queens fail, the bees will supersede them without attention on the part of the beekeeper. However, queens often fail in late winter or early spring when conditions are unfavorable for rearing and mating young queens. At such times, unless

A Colony Destroyed by the Wax Moth

the beekeeper gives them proper attention, the colony will dwindle away and die.

Probably hundreds of moth eggs are laid in every hive in the Eastern states every year, yet the finding of moth larvae in strong colonies is not common. If you keep your colonies strong you need never worry about moths, for the bees will attend to them.

Care of Surplus Combs

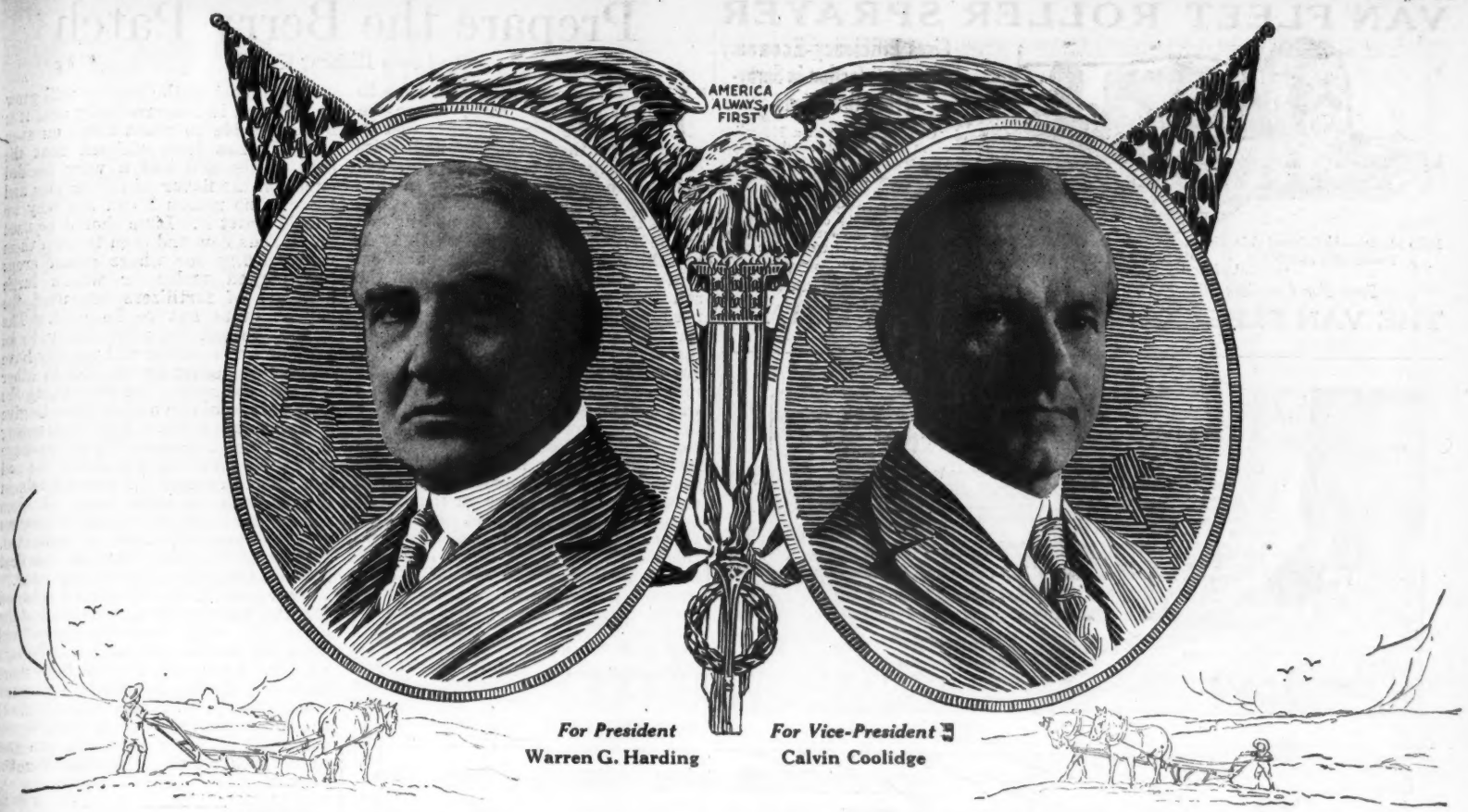
Hundreds of dollars worth of combs are destroyed in most any neighborhood every year from lack of care of combs which are removed from the hives. Beeswax is worth about 40 cents a pound, and yet too many people waste it as though it was without value. If a super of combs is removed from the hive and left without attention a few weeks in warm weather, it is likely to be entirely destroyed by the wax moth. Surplus combs are safest when left in the care of the bees until freezing weather in fall. Combs removed from the hive should be closed up tight to prevent access of the moths. They should be examined within a few days to make sure that eggs were not already present, and, in case moths are found, the combs should either be returned to the bees or be placed in a tight box and treated with carbon disulphide or sulphur to kill the moths. In large apiaries the care of combs is a real problem, since hundreds of them are necessary for storing the honey.

Shipping Bees

Another question that is asked frequently is: "Can bees be shipped safely and does it pay to do so?"

Bees can be shipped readily if the

(*Continued on page 38*)



The Republican Party and the Farmer

To the Farmers of the Northwest:

Next November you will join with all other good citizens in choosing a president of the United States for the four years beginning March 4, 1921.

You must choose either Warren G. Harding, the Republican nominee, or Gov. Cox, the Democratic nominee. There is no third choice. One or the other of these two men will be elected. The affairs of the nation during the next four years will be directed either by a Republican or by a Democratic administration.

Which will best serve your interests, both as a citizen and as a farmer?

Let us look at it for a moment from the purely farm standpoint.

Your experience of the past seven years, and especially during the past three years, tells you what you may fairly expect from a Democratic administration.

Your industry, the greatest in the nation, was singled out as the target for a price fixing policy which has limited the prices of the things you had to sell while leaving you exposed to the exactions of profiteers in practically every other line of production, distribution and speculation.

You have been told what you could receive for your staple products, either directly or indirectly; you have been subjected to restraints as to shipping, and all sorts of exactions and annoyances.

But there has been no limit placed upon what others might charge you for the things you have had to buy.

The result of this unwise, unsympathetic policy, while discouraging and harmful to the farm producer, has not helped the consumer. On the contrary, it has made conditions worse for him, because it has tended to curtail production and at the same time has stimulated speculation and profiteering.

The Republican party is not a class or sectional party; its policies are intended to upbuild the entire nation. But it believes that it is essential to the welfare of all our people that the farmer, whose industry is the very foundation of our national prosperity, should have his fair share of the wealth which his labor and enterprise creates. It believes that if our agriculture is to be maintained the farmer must have an absolutely square deal.

The Republican party therefore, by its platform and by the utterances of its candidates, is pledged to a thoroughly sympathetic, practical, helpful attitude toward American agriculture. It promises a well thought out, constructive program which will help make farming more profitable and therefore make our farms more productive.

In contrast with this helpful attitude of the Republicans the Democratic party offers no protection to the American farmer against the cheap farm products of foreign lands; on the contrary, it reaffirms its tariff-for-revenue-only policy which throws the American market wide open to the dairy products, grains and meats produced on the cheap land and by cheap labor of foreign countries. It promises no relief from the price-fixing and price drive policies which have cost the farmers hundreds of millions of dollars during the past two years and have helped no one but the speculator and the profiteer. Nor does it even recognize the existence of the violent fluctuations in the prices of farm products—more violent and unreasonable during the past three years than ever before in our history—which have caused you such heavy and unnecessary losses.

Pledges of the Republican Party

Here are the formal pledges of the Republican party as set forth in the agricultural plank of the national platform. Read them carefully, for they are of vital interest to you.

Practical and adequate farm representation in the appointment of governmental officials and commissions.

The right to form co-operative associations for marketing their products, and protection against discrimination.

The scientific study of agricultural prices and farm production costs at home and abroad, with a view to reducing the frequency of abnormal fluctuations, and the uncensored publication of such reports.

The authorization of associations for the extension of personal credit.

A national inquiry on the co-ordination of rail, water and motor transportation, with adequate facilities for receiving, handling and marketing food.

The encouragement of our export trade.

An end to unnecessary price fixing and ill-considered efforts arbitrarily to reduce prices of farm products, which invariably result to the disadvantage both of producer and consumer.

The encouragement of the production and importation of fertilizing material and for its extended use.

The extension of the federal farm loan act so as to help farmers to become farm owners and thus reduce the evils of farm tenantry, and also to furnish such long-time credit as farmers need to finance adequately their larger and long-time production operations.

Revision of the tariff as necessary for the preservation of a home market for American labor, agriculture and industries. (Note that the pledge to the farmer is just as specific as to labor and capital.)

Harding's Endorsement

Senator Warren G. Harding, the Republican nominee, in his speech of acceptance took advanced ground on behalf of agriculture. He said:

"I hold that farmers should not only be permitted but encouraged to join in co-operative associations to reap the just measure of reward merited by their arduous toil.

"Our platform is an earnest pledge of renewed concern for agriculture, and we pledge effective expression in law and practice. We will hail that co-operation which will make profitable and desirable the ownership and operation of small farms and which will facilitate the marketing of farm products without the lamentable waste which exists under present conditions.

"A Republican administration will be committed to a renewed regard for agriculture and seek the participation of farmers in curing the ills justly complained of and aim to place the American farm where it ought to be—highly ranked in American activities and fully sharing the highest good fortune of American life.

"Becoming associated with this subject are the policies of irrigation and reclamation so essential to agricultural expansion, and the continued development of the great and wonderful west."

Mr. Harding pledges federal co-operation with state governments in building and improving farms-to-market roads rather than national highways, to cheapen and facilitate the quick shipment of crops.

Republican National Committee,
Auditorium Hotel, Chicago, Ill.

Please send me, free and postpaid, copy of Senator Harding's Address on the present day problems of the farmer.

Name.....

Address.....

Send for a free copy of Senator Harding's address in which he discusses at length present day problems of the farmer.

REPUBLICAN NATIONAL COMMITTEE, Auditorium Hotel, Chicago

(PAID ADVERTISEMENT)

Prepare the Berry Patch

By Lewis Hillara, Kansas

THIS summer is the best time to make up our mind where we want the berry patches and to begin to get them ready. Our berries will be large and luscious and our plants productive very much in proportion to the condition of the soil in which they are grown. In no way can we be so sure of having this right as by taking a season for its preparation.

We will be growing a crop on the soil this season, of course, but this need not prevent our making ready for the berries. Good cultivation of the crop on the ground, and the frequent top-dressing with partially rotted manure, as much as the crop will stand, will give good results in the crop growing and the soil will contain both humus and plant food from the surplus, and the mechanical condition will be improved as well. A cover crop can be sown in the fall to be plowed under as soon as the late fall rains begin, so the moisture from them may be taken down and conserved instead of running off. If the ground is not already very rich I would give a good application of manure before this late fall plowing and disk it into the surface. Then plow deep and by spring the soil will be ready for the berries and they can be set without spring plowing, the cultivator or disk being sufficient.

While most of the berries will grow on soil that is comparatively acid it is not advisable to plant them on such soil. It has been claimed that the acid in the soil has a very decided effect on the flavor of the berries and there is no reason I can see why we should doubt it. Lime should be used on all soils now and then to keep them from acidity for where green crops are plowed under or where large amounts of fertilizers are used the soil is quite apt to be acid. The richer the soil the more likely to be acid, and as the lime will usually have a beneficial effect on the soil in other ways if not needed for correcting the acidity it would be a good plan to give a liberal application before planting the berries. Applied with the manure it hastens its decay and helps the soil bacteria to change the plant foods in the soil into available form. It does not matter much what kind of lime we use, whether air slaked or hydrated, or ground limestone, though the first two will be the most commonly used.

Foul ground should not be selected for the berries as it will make the labor of cultivation excessive and after the berries spread it will be still harder. I have seen grass take more than one blackberry patch, and rank weeds smother out strawberries. If the soil is filled with weed seeds better delay the planting until you can free it or seek another location for the berries.

NORTH GEORGIA GROWING

By I. C. Wade, Georgia

I WAS interested in the article about Georgia peaches in the June issue of the AMERICAN FRUIT GROWER. I may possibly add something. Peaches were planted in South Georgia some 30 years ago, but the scale wiped them out, as effective means for control was unknown at that time. But the industry now is growing in South and Middle Georgia. Here in North Georgia, I bought the first 1,000 acres ever bought for peaches, and in 1900 planted over 60,000 peach trees together with 5,000 apple trees. This was the first commercial apple orchard ever planted in this section, although nearly everyone had a few trees, and there existed some wonderful old trees planted 100 years ago by the Cherokee Indians. I have found apple trees three feet in diameter, and peach trees that were 30 or 40 years old.

In my orchard I planted 75 per cent of Elberta, 15 per cent of Georgia Belle and 10 per cent of Carman. The last named variety I soon eliminated on account of being too early and coming in competition with Fort Valley. We always get from 25 to 40 per cent more for our peaches than do the Fort Valley growers. This is exactly contrary to your statement, and which I wish to correct.

The largest growers in the Fort Valley section are buying our orchards and coming up here after they are through with their crop. This, the Cornelia section, has been on the map pretty effectually for the past 15 years. We are growing, and have several hundred thousand apple trees in orchards. This region is well adapted to fruit on account of the iron in the soil and an average of 61 inches of rainfall yearly. We have a delightful summer climate, and our county, Habersham, is the healthiest county in the United States. I have 28 different kinds of fruits and nuts growing. In 1908 we started the Georgia Fruit Exchange here in Cornelia, and the president still lives here.

On Cape Cod, land which a half century ago was considered too worthless to be included in the list of the tax assessor now is valued at as much as $1,000 an acre. This change has been brought about through the discovery of the commercial possibilities of the cranberry.

Poultry Manure for Citrus

(Continued from page 5)

fabric of southern California agriculture

Of all the possibilities which suggest themselves as calculated to bring about any real and imminent solution of the problem of diversifying the citrus orcharding industry so as to provide for the maintenance of soil fertility without at the same time disturbing the whole system of land and water values, none appeals so much to the writer as a combination of citrus orcharding with poultry raising.

The principal advantages of this means of providing for the diversification of citrus orcharding so as to furnish manure for the upkeep of the orchard soils lie first, in the slight effect such a movement would have in disturbing present economic conditions; second, in the relatively small amount of land required to keep sufficient poultry to adequately provide for the fertilizer requirements of the trees; third, in the small amount of labor and capital required to make the desired change, and fourth, in the unexcelled character of the fertilizer obtained.

Careful experiments have shown that when confined, and all the fertilizer is recovered, one may expect to receive 70 pounds of droppings and 30 pounds of litter per fowl per year. Analyses have repeatedly shown that under California conditions where the fowls are fed a balanced ration, poultry droppings will run from one to three per cent nitrogen. On a basis of two per cent nitrogen the manure from one hen during a year would contain that amount recovered from approximately 12 pounds of nitrate of soda, or 10 pounds of sulphate of ammonia, which any orchardist will at once recognize as a larger application than has usually been given per tree in the past. It is extremely doubtful whether it would be advisable to have much more nitrogen available to a citrus tree during a season. In addition the use of poultry manure would provide for a large amount of readily decayable organic matter to be returned to the soil.

Proved by Experience

It has been the experience of citrus growers in the past that poultry manure has given very satisfactory results. Indeed there are many growers who would use nothing else if they could get all they needed. The present high prices for poultry droppings are but another indication of the desirability of this substance as a fertilizer for citrus trees. Poultry droppings are more concentrated and therefore run higher in nitrogen than other manures for the reason that both liquid and solid excreta are voided together, the solid portion tending to absorb and conserve the liquid portion and thus preventing loss. In addition, on account of the finely ground character of poultry manure it works easily into the soil and becomes available to the trees much more rapidly than other manures.

Figuring on this basis it can readily be seen that a hen per tree should serve to keep up the fertility of our orchards, were all the droppings recovered and applied to the orchards. A 10-acre unit would then consist of 1,000 hens which should require at most no more than a half acre for pens. Under proper management a profit of $1 per hen should be received and in addition the orchardist would receive the manure free of cost. Many orchardists would undoubtedly keep the hens for the manure alone if no profit whatever were realized on the business, so valuable do they consider poultry manure as a fertilizer for citrus trees. On tracts larger than 10 acres a one-man unit would be the logical thing. One man can care for 2,500 hens, the manure from which would take care of the fertilization of 25 acres. On a 10-acre tract one man could therefore care for the 1,000 fowls required for fertilization, and in addition do the greater part of the orchard work, since ordinarily it has been found that one man can do all the work on a 20-acre block of citrus.

In the citrus grove the hens would undoubtedly best be confined in pens first, in order that all the fertilizer might easily be recovered, and second, to prevent the filling in of irrigation furrows by scratching, as well as the compacting of the soil about the trees and damage to the lower foliage. Moreover, confinement to pens with cement floors would obviate the necessity of having well-drained sandy soils for the location of the poultry yards, a necessity learned in past experience in southern California.

Instead of hatching chicks or buying them, on a 10-acre unit with only half a man's time, it would probably be best to purchase annually 500 pullets per 10-acre block, culling down the flock to the required number and selling off those culled out.

In the case of larger acreages where several one-man units were installed the possibility exists that it might be found advisable to raise some one of the larger general utility breeds rather than strains for egg purposes alone, hatching or buying chicks and selling broilers and fryers. Los Angeles should furnish a most excellent market for such fowls as well as for capons, which in many places have become a profitable side line for the man who is willing to go after a select trade.

The writer realizes as well as anyone that there are certain prejudices and difficulties to be overcome in making the combination of poultry with citrus orcharding above suggested. Nevertheless, it is felt that the drawbacks to such a combination are of more or less minor importance as compared to the enormity of the problem confronting citrus growers and such as can readily be obviated. The problem of maintaining the fertility of our orchard soils is a serious one at present and destined to become increasingly difficult. The suggestion made has been given in the hope that it may prove at least a partial solution of this problem.

Note: This article from Mr. Hodgson, which was originally published in the California Citrograph, deals with a subject that is of large interest to fruit growers in every state. The maintenance of soil fertility in orchards is one of the most important matters confronting fruit growers at the present time. Among readers of AMERICAN FRUIT GROWER no doubt there are some who have had much experience with poultry raising for manure. We will be very glad if they will write us their comments on Mr. Hodgson's suggestions.

Some Points About Arsenate

Results of extensive investigations to determine the cause of the discrepancy between the theoretical killing or dosage of arsenates and the standard dosage in practice have been reported by A. L. Lovett, entomologist of the Oregon Experiment Station, in a new bulletin called "Insecticide Investigations."

A summary report prepared by Professor Lovett says that this discrepancy is due in part to physical defects—in method of application of spray, in the spray solution, and in the spray material. Other points brought out in the summary that will be of special interest to growers in Oregon and other parts of the country in which spray with insecticide is required for production are as follows:

The acid arsenate of lead has a higher killing efficiency than has the basic salt.

All the arsenic devoured by caterpillars feeding upon sprayed foliage is not assimilated, a portion passing through the digestive tract in the excrement. The portion assimilated is higher where an acid arsenate is employed. This accounts for the higher killing efficiency of the acid lead arsenate.

Under laboratory control conditions a dilution of one pound of the acid lead arsenate to 400 gallons of water proved an effective killing solution for very small tent caterpillars. It is reasonable to assume that newly hatched codling-moth larvæ are no less susceptible to poison.

The commercial lead arsenates on the market, unless specifically prepared and labeled otherwise, are nearly pure acid lead arsenate.

The powdered lead arsenates are physically superior to the paste forms and are generally the advisable form to use. Particularly is this true if one is not near the point of manufacture so as to insure a freshly made paste, which has had no opportunity to dry out or freeze.

Commercial lead arsenates are in general a standard product. They vary but slightly in the percentage of arsenic carried or in the low percentage of soluble arsenic present. In their physical properties there is considerable variation.

By improving the physical properties of the spray solution we are enabled to improve the efficiency of the spray: (a) By increasing the wetting and covering power of the spray solution. (b) By increasing its adhesiveness.

The spray solution, with a spreader, applied to the surface of the apple finally rests as a smooth, even, inconspicuous covering, affording practically an equal and perfect protection for every surface.

Apple Crop Reports

The following from the Crop Reporter of the U. S. Department of Agriculture gives the condition of the apple crop on August 1st with the estimated yield for this season as compared to the production of last year.

State.	APPLES. Condition Aug. 1. 1920	10-yr. aver-age.	1920 forecast from condi-tion. (000 omitted)	1919 Decem-ber estimate. (000 omitted)
	P. ct.	*P. ct.*	*Bush.*	*Bush.*
Maine	52	62	3,042	4,620
New Hampshire	65	61	1,477	1,510
Vermont	73	57	2,321	1,500
Massachusetts	78	66	3,533	3,240
Rhode Island	60	66	229	204
Connecticut	71	65	1,835	1,573
New York	90	54	46,817	16,800
New Jersey	84	64	3,225	2,315
Pennsylvania	81	59	18,871	7,972
Delaware	70	64	848	750
Maryland	75	62	2,820	1,944
Virginia	63	61	12,688	9,950
West Virginia	55	56	5,991	3,478
North Carolina	71	58	4,256	1,106
South Carolina	75	61	1,462	700
Georgia	74	62	1,696	636
Ohio	64	50	10,474	2,808
Indiana	62	51	5,421	1,704
Illinois	53	51	6,417	4,943
Michigan	84	54	12,133	6,484
Wisconsin	76	60	3,676	2,087
Minnesota	74	62	1,490	1,305
Iowa	65	49	3,761	1,815
Missouri	51	52	5,934	5,773
South Dakota	75	61	336	302
Nebraska	58	53	1,368	1,125
Kansas	24	51	994	1,835
Kentucky	63	55	5,063	1,430
Tennessee	71	53	5,534	1,560
Alabama	61	56	1,235	617
Mississippi	64	54	.....	.....
Louisiana	50	60	.....	.....
Texas	47	61	348	626
Oklahoma	40	59	756	1,512
Arkansas	60	59	2,820	4,230
Montana	65	70	1,134	1,200
Wyoming	56	71	.....	.....
Colorado	60	64	2,545	3,413
New Mexico	35	68	556	1,339
Arizona	55	78	102	154
Utah	80	72	896	774
Nevada	75	64	.....	.....
Idaho	75	72	3,404	4,360
Washington	70	80	15,978	23,100
Oregon	60	78	3,427	5,570
California	72	79	6,264	8,640
United States	70.4	56.8	213,187	147,497

Uncle Sam's Hired Men

(Continued from page 18)

ental and forest trees. The plague pread to Maine, New Hampshire, hode Island, and Connecticut. The tates and the federal government be- n a campaign of control. Dr. How- rd made several trips to Europe and nt back parasites and natural emies of both the gypsy and brown- il moths. These insects are no longer rious enemies of orchard, shade, or rnamental trees. Imported enemies d other control measures have got em in hand. Even in mixed forests, system of forest management has en devised which, with the help of e natural enemies, results in prac- al control wherever adopted.

A few years ago the Japanese eetle got into New Jersey on im- orted nursery stock and threatened remendous damage. The Department f Agriculture, in co-operation with the tate authorities, have held it to a omparatively small area, and a repre- entative of the Bureau of Entomol- gy is now in Japan finding out the atural enemies of the beetle and nding them to prey upon it in New ersey.

The sugar cane moth-borer for sev- al years past has been causing eavy loss to sugar planters in Louis- na, having got across the water from uba. The Department of Agriculture ept a specialist in Cuba last season nding out the natural enemies of the orer and sending them to Louisiana. number of them have been estab- shed. This year men will be kept Cuba and many more borer enemies ill be introduced to help in the con- ol of this very dangerous enemy of e sugar crop.

Another of Dr. Howard's specialties medical entomology—he is an M. D. addition to the scientific degrees he olds from Cornell and other institu- ions. He has been especially inter- sted, therefore, in the insects that ause disease in man. The detection f mosquitoes as carriers of yellow ever and malaria made the control tudies and biological studies of mos- uitoes which he early made in the Department of Agriculture of the reatest help in the control of dis- ase. So has the work against the ouse fly as a carrier of typhoid fever nd other diseases. His books, "Mos- uitoes" and "The House Fly—Disease Carrier," were published when the ampaigns against those insects were n the critical formative period, and ach book has been a power against he enemy of man with which it deals.

These are just a few of the things hat the Bureau of Entomology, under Dr. Howard's direction, has done. There are a great many others, some f them of even greater economic im- portance. Just now, the entomologists f the department are fighting the ink bollworm of cotton, the most de- tructive enemy of that crop, which as got into Texas and Louisiana from Mexico. But for this work, it would pread over the south, levying a heavy oss on every crop and undoubtedly estroying the cotton industry in many places. When the cotton-boll weevil ame in 28 years ago, Dr. Howard ecommended the passage of a strict uarantine law and a campaign of xtermination while it was still con- ined to a narrow area. State co- peration could not be secured, how- ver, and the boll weevil has destroyed illions of dollars of cotton every year ince, estimated as high as $200,- 000,000 in a single year. During the ast few years, however, the Bureau f Entomology has discovered a means of control by dusting the cotton with alcium arsenate. The effectiveness of it is indicated by the results of ne experiment in an abandoned field where a poisoned strip produced 480 pounds of cotton against 50 and 60 pounds, respectively, for two unpoi- oned strips of similar area. This sys- em has been adopted by many planters and is already saving tre- mendous quantities of cotton.

The Hessian fly has long been the most destructive enemy of small grain —seriously competed with only by the chinch bug. Cultural methods of control have been developed which, where followed, reduce injury from both these pests by millions of dollars a year.

A slight modification in cultural practice was found by which the clover-seed midge is controlled and the clover seed crop over a large part of the country saved.

Coniferous forests are protected against the destructive bark beetles by a system of removing a certain per cent of infested timber at certain periods, and the cost is met by the value of the timber cut.

But the story cannot be told in full. Nearly half a century of work cannot be shaken down into a sketch. During that time, Dr. Howard has written and published more than 800 books and papers, many of which have been translated into various languages. He is a member of more than 20 scientific societies in this and foreign countries. He is a member of the National Academy of Sciences, is president of the American Association for the Advancement of Science, and has held offices in various other scientific bodies in this country.

And all those things have not taken up all of his time. He used to be interested in all out-of-door sports, and in later years has devoted some attention to golf. But his principal recreation is people. He is always interested in the other person's viewpoint, whether the other person be man, woman, or child. He talks with everybody everywhere, and learns something from all of them, he says.

Reverting to the initial estimate placed on Dr. Howard's services, I do not want to create the impression that even at half a billion dollars a year, he is the most valuable man in the Department of Agriculture. As I said before, he is a modest man, and such a statement would not please him. Anyhow, there are 16 other bureau chiefs, anyone of whom has a value comparable to his.

The apple growers of northwestern Arkansas have been making very extensive use of manure shipped from Kansas City stockyards this winter.

Gladiolus, the Flower-Beautiful

By Edith Lyle, Ragsdale, Illinois

SO OFTEN I hear people remark: "Oh, I'd love to raise gladioli if I could have any luck with them," or, "I admire the blossoms, but they are short-lived; if I give them a space in my garden there is sure to be a bare spot as soon as the blooming season is over."

Now, as I am particularly fond of these beautiful flowers, I herewith give my way, which has proved very successful in raising them in their greatest perfection, as well as preventing the unsightly bare spot which their early blooming does leave in the garden. Also, I give a few of the sorts which I know to be reliable.

My flower garden is at the rear of the house, the whole front and sides being given over to lawn. Also in the rear is the grape arbor, which is about 20 feet long, running east and west. Along the entire south side of the arbor is my gladioli bed.

How Bed Was Prepared

When I first decided on that as the most desirable spot for them, we dug the blue grass turf out for a space of four feet wide and 20 feet long. Then we dug down about two feet and filled in six inches with well-rotted manure. We followed this with leaf mold and ordinary garden soil, raising the bed perhaps six inches above the level of the lawn. Along the back of the bed I set hollyhock plants two feet apart. These grew rapidly, forming a beautiful green background, which, aided by the darker green of the grape leaves, afforded an ideal contrast for the vari-colored blossoms of the gladioli.

The first week in May I dug trenches six inches deep and buried my gladioli bulbs. Then I sowed, broadcast, a packet of snapdragon seed. In a few days the gladioli shoots began to appear and when they were a few inches high I hoed them. Then, when they were up well, about a foot, I pulled the earth to them, helping to support their long stalks.

When the buds began forming I drove a stake at each corner of the bed and stretched two-inch mesh poultry wire over the bed about two feet from the ground. As this wire had received a coat of dark green paint, as had the stakes, it was scarcely noticeable. The buds of the gladioli were, when necessary, guided through the wire, which gave them the needed support.

Gladiolus with Snapdragon

While the gladioli were growing the snapdragons had not been standing still. Cultivating the soil had not materially injured them, in fact, they had to be hand thinned to prevent crowding, and were now a mat of soft green about the feet of the gladioli. Even before the last-named flowers began blooming the snapdragons were in full flower.

The earliest blossoms to show on the gladioli stalks were those of the Pink Beauty. To some this variety might not appeal, as they are only medium in size, peachblow pink, heavily blotched with crimson, in color. Personally, I think them lovely. Then came Halley, salmon pink flowered, opening as Pink Beauty reached the zenith of its glory. Halley is lovely, more so than Pink Beauty, being larger, more profuse, and having distinct cream blotches on the two lower petals, through which runs a narrow stripe of crimson.

Following these two early named gladioli came Empress of India, one of the darkest reds. The buds, before opening, are black. For myself, I admire the one which bears the unfortunate name of "War." Being a peace-loving woman, and having heard a lot about war in the past four years, I feel like "forever and forevermore shunning the appearance of war"—in all forms save this beautiful flower, which I am at a loss to describe, it is such a magnificent, tall, upright beauty. The open flower is very large, deep blood red in color; and the flower stem frequently measures three feet in length. This wonderful variety must be seen to be appreciated.

Come in Many Colors

Schwaben gave us giant, clear yellow flowers, with just a touch of brown in its throat; Niagara, immense, wide open flowers of soft yellow tinged with pink. It seems pink is the predominant color in the scheme of gladioli. Dawn, fit queen of the morning, actually holds one spellbound before its wonderfully fluted and ruffled creamy, pink penciled, petals.

But there are many good white varieties, and who would have a garden void of white, the symbol of purity? After quite a while I decided that I would give some of the best named sorts a trial; these were rather more expensive than I had counted on, but I have never regretted the amount of money expended upon them. However, I have never found a gladiolus absolutely white. There will always be a little tinge of some brighter blossom flushing the surface of the whitest sorts. Thus, Lily Lehman is wonderfully large and remarkably white, save for the faintest pink flush; Reine De L'Anjou, white, with slight crimson markings in the throat; this sort often produces three strong flower spikes; Gil Blas is another good sort with large white blossoms just

faintly shaded with lemon and having a dainty blotch of carmine in its throat.

For blues (rare color in flowers) I tried, with satisfaction, Baron Hulot, an oldtime favorite, rich indigo-blue flowers and very hardy. The bulb is strong and increases rapidly. I only tried out a few of the blue sorts, for truth to tell, I love the bright blossoms, crimson, scarlet and pink—or pure white. While the bright-hued flowers are a daylight comfort, the white ones are no less a night consolation. It is a joy to me to sit on the porch after the dusk has fallen and see the white glow of blossoms. I plant as many of each as space permits.

Storing the Bulbs

The beauty of gladioli must surely appeal to everyone once a nice bed is secured, and, here is another advantage of growing these stately flowers, anyone can afford them. They have been called "the poor man's flower," because the bulbs are, as a rule, moderate in price and multiply very fast. By exercising a little patience one may gain a fine collection in a few years. By purchasing a few bulbs and caring for the bulblets (which are found in great numbers about the new corm and which will be much larger and finer if left until late fall before lifting from the ground) one may have quantities of this regal flower.

An excellent plan is to leave the bulbs in the ground as late as weather conditions will permit before lifting. Carefully remove the bulblets and plant at once in dry earth in shallow boxes. Label each box and store in the cellar until spring. Then fetch into the light, water and set in a warm spot. When the weather becomes settled the boxes should be placed outside. By this means the bulblets gain at least three weeks' time and some will bloom the first season; all will bloom the second year.

While I love the dahlia, I am compelled to admit the gladiolus is the finer flower, having the advantage of being a true, free bloomer and occupying a relatively small space of ground. One may grow several hundred gladioli in the space allotted to a dozen dahlias.

How Beds Were Planted

When my gladioli are through blooming I cut back the stalks, remove the wire netting and stakes, leaving the snapdragons to cover the ground, which they soon do, blooming up to, and after, frost.

As I had studied the habits and the time of blooming I arranged my gladioli accordingly. I planted the extra tall, late blooming sorts at the back of the bed, next the row of hollyhocks; medium tall, midsummer sorts were planted next, with the shorter, earlier varieties at extreme front of the bed. By this means I prevented a haphazard appearance, which would have detracted from the beauty of the general effect.

Unknown to many, there are sorts which may be successfully forced indoors in early spring. The Gladiolus Colvillei is, perhaps, the best variety for this. The flowers are light in color, slender, and very graceful. I have had good success growing them in water, as one grows Chinese lilies.

Producing New Varieties

Another interesting branch of gladiolus culture is the growing of bulblets from seed. There is a sort of adventure attached to the work that is extremely fascinating. One never knows just what the result will be. It is rarely a disappointment, yet at times the results do not fill one with joy. However, there are times one meets with great success, when the experiment produces something unknown even to the greatest florists of the age.

One may prepare the seed bed and plant, say, 10,000 of the tiny brown seeds, knowing that each bulblet will produce a bloom different from its neighbor. To secure the best results the blossoms from which the seeds are to be taken must be pollinated either by hand, by bees or humming birds. After years of patient care your labors may be rewarded by producing one of the finest blossoms ever seen, a rare seedling.

Two years, sometimes three, these seedlings must be cared for and tended. They are much more to care for than the bulbs. Then, when the time for bloom comes, one can hardly wait to see the petals unfold. Sometimes they are all that one may reasonably expect. At others, they are just common sorts. But in either case the work is fascinating, and then there is always the hope that we may produce something really worth while.

The producer of America, Mrs. Frank King and Independence, thought so little of them that he sent them out as "mixtures" (cheap bulbs). In each instance an American discovered their worth and put them in their proper class. Likewise, Kundered put in a mixture that brilliant beauty, Mrs. Frank Pendleton, and it is said that he valued only slightly his lovely "Myrtle" until the Massachusetts Horticultural Society awarded it a silver medal.

WANTED

We want good, clear photographs of spraying outfits at work in orchards and drawn by tractors or mounted on motor trucks. Some fruit growers have their sprayers mounted in such a way they are operated direct from the tractor or motor truck. We want photographs of such outfits. The photographs should be on glossy paper, unmounted and accompanied by a brief description of the equipment, make of tractor or truck and name of owner. All photographs suitable for publication will be liberally paid for. All others will be returned. Address, The Editors, AMERICAN FRUIT GROWER, 416 State-Lake Bldg., Chicago, Ill.

WORK WITH GRAPE JUICE

By L. C. Corbett and J. S. Caldwell

In the studies on grape juice carried on by government experts 64 varieties, including all the more important and widely grown wine and table grapes of the eastern states have been employed. The purposes in view in the work have been to develop methods of utilizing varieties of grapes formerly grown for wine-making and not suited for table use, to provide an outlet for table varieties where produced in excess of market demand, and to develop simple, generally applicable, methods for making unfermented beverage juice from these grapes on the small home and farm scale. Many of these juices cannot be clarified by the methods ordinarily in use, consequently simple and effective methods of clarification, which yield transparent, attractive juice without producing deterioration in color or in flavor, have been worked out in this laboratory and applied with success not only to unfermented grape juices but also to apple juices.

As comparatively few of the varieties of grapes studied yield juices which have satisfactory beverage quality, when used alone it is necessary to blend juices of two or more varieties in order to secure juices possessing agreeable flavor and the proportions of sugar, acid and tannin requisite to satisfactory beverage juices. In the work thus far done it has been possible to employ a considerable number of the more widely grown eastern wine grapes in making blended juices with satisfactory results, and the transparent juices thus far made are, in some cases, fully equal if not superior in quality to commercial juices of the Concord type. This work offers possibilities for the home and farm utilization of wine grapes for which there is at present no other outlet and it is developing simple methods for the general home manufacture of a number of types of unfermented grape juices of high quality wherever a surplus of table or wine grape exists.

The testimony of agricultural experts is that at present the question is no longer "Shall we buy a tractor?" but "What tractor shall we buy?"

Using the Spray Gun

ONE of the greatest labor-savers in spraying that has ever been introduced is the spray gun. When used as it should be, a spray gun is very satisfactory, but many complaints are heard, and when these are sifted to the bottom, it usually develops that the spray gun is not properly used. Since the spray gun is intended as a labor-saver, one manufacturer calls it "speed equipment." This is for the reason that one gun can handle the entire capacity of the largest sprayer; but on the other hand, one man cannot handle the entire capacity of the very large sprayers with economy. There is a point at which the capacity becomes too great and a waste of solution is certain. When that condition exists, there is an advantage in putting two guns on the sprayer.

In this event, be sure that the disks in the nozzles of the spray guns are of such a size that the combined discharge from the two guns does not exceed the capacity of the pump. If this happens, there will be a decrease in the pressure.

Set the pressure regulator for high pressure—that is for 300 pounds or more, according to the size of the machine and the length and the diameter of the hose from the pump to the nozzle. A pressure loss through friction occurs in the hose. Fifty feet of half-inch hose may give a pressure loss at the nozzle of as much as 20 pounds.

What constitutes the most desirable pressure is a matter of dispute and one which often causes heated arguments among fruit growers. But all are agreed on one thing, and that is that the machine should produce a fine mist. Careful observation of the spray that comes from the nozzle shows that at 250 or 300 pounds pressure, the spray will have the appearance of being more finely divided than at lower pressures, and will float through the air for greater distances. If the hand is held in front of the gun or nozzle in a 300-pound spray, the solution will feel to the hand more as a gentle breeze than as a forceful, cutting spray. But if the pressure regulator is set for 150 or 200 pounds and the hand again held in the spray, the "feel" of it is less pleasant, and it will be observed that the droplets are larger and the mist does not float so readily, as most of the droplets fall to the ground in a regular curve.

Change Disks Often

Be sure that the disks in the spray gun or nozzles are changed frequently. They cost but little and ought to be changed every day or so while in use. When putting in new disks, be sure that the holes in them are of the right size to permit the discharge of the full capacity of the sprayer at the desired pressure. With a hole of too large size in the spray gun, or too many nozzles with combined hole-area of too large size, the pressure will drop and adjusting the regulator will not help the trouble. If the hole is too small, the full capacity of the pump will not be used.

It is a good plan always to have a little leeway with a little solution going back into the spray tank, particularly when new disks are put in. As the disks wear larger, more and more of this overflow will pass out through the nozzle.

For the Hand Pump

Do not expect proper service from a spray gun on a hand-operated pump. If you want to equip your barrel sprayer with a device that will give you the long-distance, short-distance and quick cut-off action of the spray gun, several manufacturers can supply you with a nozzle adjusted for that kind of work. It is used on a pole for reaching the tops of high trees.

At the end of each day's work, clean out your spray pump. Run some clean water through it to wash out all of the spray material and sediment.

Machine-Made Cherries

(Continued from page 8)

direct to market or placed in cold storage. Some growers can nearly their entire crop. The Co-operative Orchard Company, for example, which, by the way, is said to have the largest cherry orchard in the world (800 acres), cans approximately 75 per cent of their production.

A drive over the excellent roads which form a network throughout the peninsula, and which pass through thousands of acres of cherry trees, brings out very vividly one interesting feature which shows a decided contrast with most fruit-growing sections, namely, that the cherry trees throughout the entire region receive most excellent care in the matter of cultivation, pruning, spraying, etc.—there are very few orchards which show neglect, while for the most part the quality of the work leaves nothing to be desired.

Tractors Are Popular

As already indicated, there probably is no fruit-growing section in the world where modern machinery is more generally used than here. During a several days' visit in the neighborhood only one case was observed where the work of cultivation was being done with horses, while on every side tractors could be seen at work with disks, spring-tooth harrows or special orchard cultivators.

The tractor is decidedly popular with the cherry growers, and the orchard owner in this neighborhood who does not own a tractor is almost an exception. It is doubtful if one could be found who did not consider the tractor superior to horses for orchard work. A great many owners of small acreages, who do not feel that their business is large enough to justify the expense of a tractor, make a practice of hiring tractors for their cultivation whenever possible.

A list of the orchardists who own tractors would be practically a complete directory of the cherry growers of the county. Not only do most of the orchardists own tractors, but a great many of them have two or three of these machines. The Reynolds Preserving Company, with about 200 acres of cherries and 300 acres of general farm, have half a dozen tractors. The Co-operative Orchard Company already referred to has three or four, while M. B. Goff, Sturgeon Bay Orchard and Nursery Company, Ellison Bay Orchard Company and the Sturgeon Bay Fruit Company have two each.

Mr. M. B. Goff, who is president of the American Fruit Growers' Association, has about 120 acres of as fine cherry orchard as can be found in the neighborhood. In addition he farms about 120 acres of other crops. When questioned as to the value of the tractor for orchard work, he showed that he was very enthusiastic over it. While his acreage is no greater than some men are handling with only one tractor, Mr. Goff believes that it is sufficient to justify the necessary investment to have two, as there are so many times when conditions are just right and it is desired to rush the work of cultivation to the limit. Furthermore, in case of any mishap to one machine the work can still go forward. He stated that a great deal of the time one tractor stood idle while the other worked, but that having one in reserve was a sort of insurance which he felt was fully justified.

Dr. A. J. Gordon, who has about 80 acres of cherries, is also a particularly enthusiastic tractor booster. In addition to the tractor which he bought for the work of cultivation, he himself designed and built a self-propelled power spray outfit by using parts of an old tractor, an automobile, and a power spraying machine. He has used this outfit for two or three seasons and it has given an excellent account of itself, reducing very materially the time required to spray his orchard. In fact the machine has done so well and been so much talked of, that representatives of several manufacturers have inspected it with a view to manufacturing a similar spraying rig.

His cherries are probably as nearly "machine grown" as any to be found, and the manufacture of a spraying outfit similar to the one he has developed will be another step in eliminating animal power from the cherry industry, as many growers who now haul their sprayers with horses will doubtless be glad of an opportunity to obtain self-propelled machines.

Some Good New Books

The Mating and Breeding of Poultry, by Lamon and Slocum. Published by Orange Judd Co., New York, $2.50 net.

It is through the visions of the breeder that domestic fowls have been improved almost beyond recognition, and the former mixed flock of the farm home has become the well bred flock of high money value. This book is full of interest for the poultry breeder, and covers a wide scope. Numerous excellent illustrations.

Farm Dairying, by C. Larsen. Published by Orange Judd Co., New York, $2 net.

This is a practical book and is designed to be of service to the practical dairyman, as well as a convenient reference book for anyone interested in the subject.

Productive Soils, by Wilbert Walter Weir, M. S. Published by J. B. Lippincott Company, Philadelphia.

This is the latest volume in the excellent series of farm manuals published by Lippincott, and deals with the fundamentals of successful soil management and profitable crop production. Do you know how the needs of a soil may be determined? This book will tell you.

In the Shadow of Lantern Street, by Henry G. Woodworth. Published by Small, Maynard & Co., Boston, $1.75 net.

Throughout this tale the conflict of ideas between east and west is strikingly shown. Like every thoroughly satisfactory novel, though full of stress and strain, it ends happily.

Best Short Stories of 1920, Edited by Edward J. O'Brien. Published by Small, Maynard & Co., Boston, $2 net.

The popularity of the short story is well nigh universal, but what a disappointment when we find the literary treat for the precious half hour has been poorly chosen. This volume by Mr. O'Brien contains a collection of stories that are intensely interesting, excellent and varied.

The Education of Henry Adams, an Autobiography. Published by Houghton Mifflin Co., Boston.

This book is a rare document of a real human being; one moreover, possessed of brilliant qualities of mind. Its historical value equals its charm, wit and humor.

The Transit of Venus, by John Philip Sousa. Published by Small, Maynard & Co., Boston, $1.60 net.

When so popular a musician as Sousa condescends to write a novel, the public naturally are interested. The Transit of Venus is a love story in which harmony is by no means the keynote.

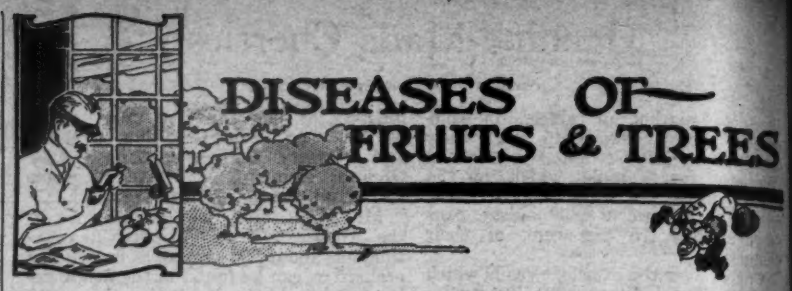
Green Rust, by Edgar Wallace. Published by Small, Maynard & Co., Boston, $1.60 net.

Do you love a mystery story? This one thrills with its exciting adventure and rouses breathless curiosity to the end.

Fairfax and His Pride, by Marie Van Vorst. Published by Small, Maynard & Co., Boston, $1.75 net.

The story of the trials, disappointments, loves and success of Fairfax, a high-born brilliant young southerner.

The American Rose Annual, edited by J. Horace McFarland. Published by and issued free to members of American Rose Society, E. A. White, secretary, Ithaca, N. Y. Annual membership, $2.00.



What Causes Disease in Trees?

THERE are at least three distinct causes of diseases that affect the fruit, foliage, wood and roots of trees. The first and commonest is caused by a fungus of some kind; the second is caused by bacteria and the third, for the want of any better term, is known as a physiological trouble. Examples of all three of these troubles are familiar to all who grow fruit, and at least one type of disease is to be found more or less well developed in almost any fruit plantation. Some of these diseases may be controlled by spraying; some are most effectively controlled by pruning while some of the physiological troubles are most easily controlled by fertilization or other cultural treatment.

A fungus disease is occasioned by a fungus which is parasitic on the plant. That is the fungus lives on the foliage, fruit or other part of the plant, obtaining its nourishment from the sap and tissues of its host. The fungus itself is a plant, but of a very low order and closely related to the moulds and toadstools. In fact, some plant diseases such as the brown rot and the Armillaria root rot of the peach, in one stage of their existence, appear above the soil as real toadstools. Many of them, however, are most conspicuous as moulds on the leaves, fruits and twigs, as in the case of the downy mildew of grapes, apple scab or apple mildew. But some of the most troublesome fungous diseases are occasioned by fungi which are never visible to the naked eye except through the damage which they cause. Examples of such diseases are familiar to fruit growers in strawberry rust, melanose of citrus, anthracnose of raspberries or blotch on apples.

Because of the impossibility of depending upon the mould appearance of diseased fruit or foliage for the determination of the trouble being occasioned by a fungus, inexperienced observers often confuse bacterial troubles with those that are brought about by a fungus. But most diseases that are caused by a fungus can be controlled by spraying, while none of the bacterial diseases may be controlled in that way. One of the commonest bacterial diseases of fruit is that one commonly known as fire blight. This is the disease that causes the leaves on apples, pears and quinces to turn brown, and to cause the fruit to take on a water-soaked, discolored appearance with sticky drops oozing from badly affected specimens. The citrus canker, a disease that has caused the citrus fruit growers of Florida vast sums of money to suppress, is caused by a bacteria, and for the control of which there is no effective spray.

Fortunately, there are few bacterial diseases, but such as do exist take a great toll from fruit growers, where the diseases are not energetically combated. Fire blight, in its attacks on apples, pears and quinces, undoubtedly ruins millions of dollars' worth of fruit every year, and always lowers the productiveness of the affected trees for years afterwards. At the present time the only known means of controlling bacterial diseases of fruit trees and plants is to keep the affected twigs cut out of the trees, and to destroy such twigs by burning. In the case of the bacterial shot hole of peaches, the disease can be controlled by an application of nitrate of soda, and in that way invigorating the tree to such an extent that it is able to resist the attack of the disease producing bacteria.

Physiological diseases, unlike either of the former, are brought about by some untoward condition which upsets the normal functions of the plant. It is almost always a case of indigestion. When the roots are unable to supply the right amount of the right materials to the leaves, these organs cannot perform their proper function in the normal manner, with the result that the tree shows that something is wrong. Sometimes this is characterized by a stunted growth and small leaves, at other times the foliage may take on a yellowish color or may become mottled with yellow and green, etc. Shallow soils overlaying a hardpan frequently cause physiological troubles, as do lack of suitable fertilization, presence of alkali, inadequate drainage, etc. In addition there are some obscure physiological troubles, the cause of which is not yet definitely known and for which there are no well defined means of combating.

Wet weather does not cause disease. Wet weather in itself does not cause fruit to rot or leaves to rust, but it does provide the conditions which are ideal for the development of diseases that are caused by fungi and bacteria and aids in bringing about the so-called physiological diseases. Every peach grower has observed that there is little or no loss from brown rot or scab in dry years, while in wet seasons it requires extra effort to combat these diseases. Apple growers in the bitter-rot sections know what is very liable to happen when the weather turns rainy a little before apple harvest. Then the conditions are favorable for the development of bitter-rot. Fungi causes such diseases, and their rapid development is favored by an abundance of rain.

Control of Fungous Diseases

There are no fungous diseases of plants which do not in a very large measure yield to control by spraying with some of the present day fungicides, except in the case of those fungi causing diseases of the wood and roots of plants. But by control, I do not mean that such diseases can be cured after they have started their work. A fungous disease cannot be cured after it has made its appearance. But it can be kept from starting its work through the use of a spray of such composition as will kill the fungous spores as they start to germinate, or else prevent their germination. On that account it is necessary to spray plants before the diseases make their appearance.

It is now possible for the commercial or amateur fruit grower to obtain in a commercial form, all ready for use, almost any kind of spray material that he wishes to use. Since these materials are made by expert workmen and chemists under the most favorable conditions, they are of much more uniform strength than the homemade article. And as they are made in very large quantities, where the production cost is at the absolute minimum, their cost, delivered at the orchard, is well in line with what it would cost to make them at home. In fact, more commercial fruit growers each year are giving up the home manufacture of their spray materials and using the commercially made articles.

In this department of the AMERICAN FRUIT GROWER we will, from time to time, give consideration of the diseases and insect pests of fruits that may be controlled by spraying. We invite and urge subscribers to send in specimens of the diseases affecting their fruits for identification and suggestions for their control. No matter what fruit crop you are growing, or where you are located, if your fruit is affected by some disease that you do not know, and do not know how to control, send us a specimen and write us about it. It will be identified if possible, and means for its control suggested. Specimens should be addressed to The Editors, AMERICAN FRUIT GROWER, State-Lake Bldg. Chicago Ill.

What Is It, Apple Juice or Cider?

By Arthur W. Christie, California

THE APPLE is the fruit of which we have earliest record. This now world-renowned fruit was the innocent cause of the first trouble in the garden of Eden. Despite this unpropitious introduction, the apple has become the king of fruits throughout the civilized world. Aside from its direct use as an article of food, the juice of the apple has been used as a beverage since the beginning of time. In early translations of the bible the term "cider" is used, being equivalent to the Hebrew word "shekar" meaning "strong drink," or an alcoholic beverage made from apples.

In European countries, the word "cider" is always confined to the fermented juice and apple juice is not considered to be cider until after fermentation. In other words, cider bears the same relation to apple juice that wine does to grape juice. The fermented juices of other fruits are sometimes spoken of as "cider," as, for instance, "pear cider," but such usage is not strictly correct. Pear cider is properly termed "perry."

Hard Cider

In the United States, the word cider has acquired a broader meaning, being defined as the expressed juice of the apple used as a beverage either before or after fermentation. In order, therefore, to differentiate between the fermented and the unfermented product certain qualifying terms have come into use. "Sweet cider" is commonly used to designate unfermented apple juice while "hard cider" denotes apple juice in which most of the sugar has been fermented to form alcohol. The terms "cider brandy," "apple brandy," and "apple jack" refer to a concentrated hard cider made in either of two ways. Any alcoholic beverage may be distilled to yield a product higher in alcohol and lower in water. If hard cider is permitted to freeze slowly it is possible to remove a considerable amount of the water in the form of ice, the remaining liquid being more concentrated in alcohol.

The recent drought which has overtaken our land makes unlawful the manufacture of hard or fermented cider. No longer is that little organism belonging to the yeast family and known to the scientist as Saccharomyces apiculatus permitted to carry on its nefarious occupation in the apple juice. Formerly a highly respected member of society, this microscopic organism has now been ostracized and must remain in a state of hibernation or seek other climes where its activities are not looked upon with disfavor.

When to Say Apple Juice

Many of the former manufacturers of alcoholic stimulants are directing their energies toward the production of soft drinks with which to quench the thirst of the American people. Hundreds of new beverages bearing strange and fanciful labels and containing various ingredients of expected potency have appeared on the market. It would appear that one of the most popular and certainly one of the most wholesome of these beverages is the product sold variously under such names as apple juice, cider, and sweet cider. It is correctly assumed that such products are one and the same, all consisting of the unfermented juice of the apple. Such being the case, it seems logical to select one best term to designate this product. Since "cider" may mean fermented as well as unfermented apple juice, it would be clearer to use the words "apple juice" exclusively. This term is clear-cut and amply descriptive in itself, falling in the same class with grape juice, loganberry juice, etc., all of which terms mean the pure unaltered juice of the fruit.

For a final decision on the correct labeling of any food product we must refer to the Bureau of Chemistry of the United States Department of Agriculture which bureau is charged with the enforcement of the Pure Food and Drugs Act. In its "Standards of Purity for Food Products" (Circular 136, Office of the Secretary, United States Department of Agriculture) issued in June, 1919, the bureau states that schedules for fruit juices are in preparation. Therefore, pending the establishment of such definitions it would seem desirable to adhere to the self-defined term of "apple juice."

Types of Apple Juice

There are, of course, considerable differences in quality between the numerous brands of apple juice on the market. These differences are a result either of the quality of the apples used or of variations in the process of manufacture. Assuming that the juice has been prepared in a sanitary manner from apples of good quality, the main differences of manufacture lie in the manner in which the clarified juice may be preserved. The different types of apple juice may be summarized as follows:

1. Boiled Apple Juice: By bringing apple juice to the boiling point and sealing in bottles or cans while hot, the fermentation of the juice is prevented. Boiling the juice causes it to lose its attractive fresh flavor and acquire a more or less cooked taste. Such a product is best adapted for culinary purposes as in the making of mincemeat.

2. Apple Juice Plus a Preservative: It is possible to prevent the fermentation of the juice by the addition of a small amount of a chemical preservative, the one most commonly used being benzoate of soda. The Food and Drugs Act permits the use of this preservative providing the amount used is plainly stated on the label. The usual amount is one-tenth of one per cent. Although a good quality of juice can be produced by this method, the use of chemical preservatives is becoming more unpopular since it has been demonstrated that such preservatives are unnecessary.

3. Pasteurized Apple Juice: By heating the juice at a temperature of 170 degrees F. for 30 minutes in sealed containers or by running such pasteurized juice while still hot into sterilized containers and sealing, the yeasts and molds are destroyed and spoilage of the juice cannot take place. The relatively low temperature of pasteurization does not impair the quality as in the case of boiled apple juice and the pasteurized drink retains the delicate flavor of the fresh juice.

4. Carbonated Apple Juice: Carbonated juices, although slightly more expensive, are the most popular. The sparkling, effervescent nature of such a juice makes it more palatable and gives added zest to the fresh apple flavor. A further and very important function of the carbon dioxide gas lies in the fact that carbonated juice may be safely pasteurized at a temperature of only 150 degrees F., as compared with 170 degrees F., necessary for the uncarbonated juice. Obviously the lower the temperature of pasteurization the less effect of the heat on the flavor. This ace among apple juices is variously labeled "Carbonated," "Sparkling," or "Champagne Style" which means nothing more nor less than pure apple juice which has been charged with carbon dioxide and pasteurized.

It would seem preferable, therefore, in view of the confusing nature of the term "cider" to use the descriptive term "apple juice," adding such explanatory matter as "boiled," "contains one-tenth of one per cent benzoate of soda," or "carbonated" as the product may require. Our king of drinks could not then be accused of masquerading under false colors and the term "cider" would be reserved for fermented apple juice before it has reached the condition of vinegar.

Cider Makers Must Have Permit

(*Continued from page 16*)

to any one who may desire to purchase it; this he may do under the provisions of Section 4, of Title II, of said Act.

"This regulation is not intended to cover the commercial use of cider and fruit juices, but merely the use of the same as applied to the home and as provision is made in Section 29 of Title II, of said Act."

The fact that intoxicating cider and fruit juices made and consumed in his own home must be "intoxicating in fact" lends considerable latitude to the fruit grower making his homemade cider.

In a conference with one of the directors of federal prohibition it was learned that there was no disposition on the part of the government to persecute anybody but only to carry into effect in good faith with as little hardship as possible a reasonable interpretation of the law under the constitutional amendment.

The Wax Moth

(*Continued from page 26*)

hives are properly prepared, and extensive beekeepers ship thousands of colonies every year. In California, many beekeepers practice shipping their apiaries from one part of the state to another in order to take advantage of honeyflows from different sources at different seasons of the year.

Beginners are usually advised to buy bees near at home if possible, since there is less danger of losing them. While there is little danger from shipping long distances if given proper attention on arrival, the novice often makes some serious mistake which results in unnecessary loss.

To ship bees safely, the frames should be fastened to prevent them from jarring about and crushing the bees. For this purpose, I have found crushed newspaper crowded tightly between the ends of the frames to serve very well. On one occasion I moved about 75 colonies of bees by auto for 75 miles, and did not break a comb or lose a colony. Moving screens were placed over the tops of the hives in place of the covers and the entrances were closed. The moving screen is made with a rim about two or three inches deep which just fits the hive, and this is covered with wire screen. This deep space gives the bees room to cluster over the frames and prevents danger of smothering. When the screen is tacked directly over the frames the bees often crowd under it so closely as to prevent those below from getting air. This often results in overheating the brood and melting the combs.

MORE ABOUT SCALECIDE-ARSENATE

By Joseph W. Fox, Utah

In regard to the discussion in your June issue regarding the mixture of lead and scalecide, by Mr. Pratt, I may be able to throw a little light on this subject.

A one per cent mixture of scalecide, with arsenate of lead, powdered, used at the rate of 2½ pounds per hundred gallons, curdled and left 50 per cent of the oil on top of the solution. This solution made no impression on the aphides on the Jonathan apple trees sprayed with it, but it did thin out the red spiders considerably with which the trees were badly infested. It added nothing to the spreading properties of the solution.

A one per cent mixture of scalecide, with magnesium arsenate, used at the rate of 2½ pounds per hundred gallons, mixed perfectly. It spreads nicely and kills some aphides and helps considerably in the control of the pesky red spider.

A one per cent mixture of scalecide with sodium arsenate weed killer makes the solution much more effective in killing burdock, and weeds of that class.

The Orchard Home

A Section for Orchard Women and the Children

Edited by Mary Lee Adams

Why Farm Women Seek City

HOW SWEET and peaceful is country life as compared with the noisy, dusty rush of the city. How beautiful too is nature as compared with the crowded buildings of most cities. So evident are the advantages of farm life over city life that we feel convinced, if certain of its disadvantages were corrected, there would be no difficulty in holding the boys and girls now drifting in alarming proportion to the city.

Many will be surprised to learn that farmers' daughters are leaving the farm in greater proportion than farmers' sons. The girls, indeed, show little timidity about going to the city to find work. This drift of the brightest and more enterprising young women away from the farm, leaves the boy who sticks to the farm a less favorable choice when he looks for a wife. The ill effects of this are bound to be reflected in the next generation of farm children.

When we know the general conditions of life and labor of the average farm woman, we no longer wonder that her daughters early plan to escape the drudgery their mothers endure. Let us study the findings of a survey conducted by the United States Department of Agriculture, in co-operation with State Agricultural Colleges and Farm Bureaus, in 33 states of the north and west. At the same time let us remember that no alleviation of these conditions would have been found in the south.

First—the average working day of the farm woman is 11 hours, somewhat longer in summer and shorter in winter. Half of the women are at work at 5 A.M. Only 13 in every hundred can count on an annual vacation. In 60 homes out of each hundred, water must be carried from the pump or spring for cooking, washing and household needs. This is an exhausting task, and in fully half of these homes it is performed by the women.

The average farmhouse has seven rooms to be kept in order and 79 per cent have kerosene lamps to be cared for. Almost all of the women do most of the family sewing, bake all of the bread, and a large proportion of the farm women work the vegetable garden, churn, and look after a flock of chickens. Twenty-five per cent help with the stock and, for six weeks each year, with the fieldwork. In this list of activities we have not yet included the most important and absorbing—the care of the children.

It is pointed out with entire truth, that the only way to better these working conditions is by the introduction of labor-saving devices into the home. Nearly half the farms have power for operating machinery, yet less than a quarter of them have power in the dwelling. Isn't it the poorest kind of economy for the farmer to invest his savings in more land (when he cannot now find labor to care properly for what he already has) instead of investing in labor-saving machinery for his wife and daughters?

Outside of the practieal saving that would be effected, how much happier home would be with a contented family, and, as from all time young men have followed young women, we may rest assured that every attractive girl who deserts the farm, potentially carries in her train some boy who might otherwise remain to be a support to his community.

Self-Consciousness Hampers

SHYNESS, timidity, bashfulness are generally mere names for self-consciousness. There are instances of self-conscious persons who are at the same time so self-confident that they feel no symptoms of the uneasy sensations above mentioned. If they are conscious of themselves, it is to feel that they are all right and expect others to think so too. This is, especially in children, apt to produce a sort of assured forwardness that is, to say the least, unattractive.

A child with this tendency must be treated quite differently from the sensitive child suffering from timidity. This form of self-consciousness will often absolutely prevent the person so afflicted from doing even those things they are fully capable of doing. For instance—a child may be able to sing and dance prettily for its mother and yet be utterly abashed when asked to perform for strangers. Even though modest, this child is unable to avoid thinking of the impression it is making, and its very modesty induces it to fear the impression will not be good.

Parents have a difficult task in overcoming this trait which may work to the disadvantage of the child throughout its life. Too much praise is apt to instill conceit, at the same time, the shyly self-conscious child should be encouraged in every way to believe that it will succeed in its undertakings, and approval should be freely and generously given all its efforts. Above all, do not let it take itself too seriously. The child should recognize that a failure or awkwardness it could not avoid is of no such great consequence.

Often the overanxiety of parents to have their children appear well, leads them to be so critical on points of deportment that the child becomes stiff and hesitating in manner through fear of doing the wrong thing, and sometimes grows up shy and awkward. Children should never be ridiculed for little faults of manner, but parents can tactfully, both by example and precept, suggest that happy naturalness and apparent freedom from restraint which are the essence of good manner and charm.

Avoiding Useless Worry

HAVE you tried shutting your eyes and walking straight forward without wavering? Can you do it? You can't. Are you not amazed when you see a blind man on a city street, stepping with apparent certainty, with only his tapping cane for guide? In the matter of seeing where the next step in life will lead us, we are all born blind. No man knows what the morrow may hold. Shall we waver and stumble as if the gift of foresight were our birthright of which we are temporarily deprived, or shall we go ahead like the man born blind who must take certain risks if he is to get anywhere?

It will immeasurably increase our usefulness and happiness if we do not yield to constant apprehension. We saw this lesson taught by a bright little woman who, recovering from an illness, went south for a needed change of climate, taking along her four younger children. As the four-year-old baby explained "The two others had to stay home with Father an' go to school, but we came to help Mother." As "mother" was keeping house for them all with no outside assistance, the prospect for rest seemed none too bright, and yet she was evidently resting and growing strong. So were the little ones who looked out on the world with the same confident friendliness that shone in her eyes.

What if she had worried all day long about these wee folks? She couldn't keep them in sight every minute without either overexerting herself or restricting them intolerably. She took the only sensible course: simplified housekeeping to a kind of continuous picnic which the youngsters adored: trusted to the obedience which had been carefully instilled: commended the smaller ones to the care of the ten-year old and, for the rest, confided as they did in that kindliness toward little children which is to be found in all hearts. All throve amazingly, made hosts of friends, and the mother went home fully able to meet her duties and responsibilities.

Leisure and Entertainment

HOW to strike the proper balance between work and play is perhaps the farm woman's most delicate problem. The unselfish housekeeper would often deny herself every recreation rather than neglect any detail of comfort for her family.

Such loving service is beautiful, but how fortunate it is that most women now realize that she who serves too arduously defeats her own end and becomes less efficient, less companionable, and (cruel and ungrateful as it may seem, less beloved than she who in her wish to be good to others knows that she owes it to them to be good to herself.

Recreation is essential to the normal human being. Consider the word and see that its meaning is to recreate, to create anew. That recreation has come to indicate some kind of pleasurable entertainment, is an acknowledgment that entertainment is the necessary means for such making over as we all need at times.

One may easily err on the other side. It is only when a certain "staleness" caused by overwork and fatigue has set in, that one needs to be recreated.

A Farm Stream and Electricity

By E. N. Cable, Ohio

MANY people today who live in country homes are interested in obtaining electricity for use there, for lighting and for power. Often there is a stream of running water on the farm and the owner is asking himself how to harness that stream and make it deliver the electricity he desires.

To find out the power possibilities of such a stream, select a place where the banks are fairly parallel and not too wide apart. Across the stream, at this point, set a stout board edgewise with an end in either bank, so that the water cannot run around it but must be dammed back into a level pool. A gate should be cut out of the upper edge of the board large enough so that the water will run through it and not over the top of the board proper. Such a board forms a weir, and you can find the capacity of the stream by its use.

How to Measure Water

Measure the depth in inches of the water flowing through the gate or opening. Suppose the depth of this water is 10 inches, and the width of the gate or opening is 25 inches. This gives 250 square inches, the area of the cross section of the stream of water flowing through the opening, and the capacity of the stream.

It has been found that for every square inch in such a cross section, one cubic foot of water is escaping every minute. This 250 square inches then stands for 250 cubic feet of water a minute. A cubic foot of water weighs 62.5 pounds, and the weight of this water, falling one foot, is 250 x 62.5, or 15,625 foot pounds. The power of water is in direct proportion to its head, and if these 250 cubic feet or 15,625 pounds of water can be dropped 10 feet in a minute, we have 156,250 foot pounds.

Now, a pressure of 33,000 foot pounds per minute is equal to one horse power, hence our 156,250 foot pounds equal slightly under five horse power.

The approximate horse power of any stream whose weir measurement we have obtained can be determined by use of the formula:

$$\frac{\text{Cu. ft. per min. x in feet x 62.5}}{33000} = \text{Horsepower}$$

This, it must be remembered, is theoretical horse power. Actual horse power, with the small water wheel, because of friction and other transmission losses will be about 25 per cent less.

It is not the purpose of this article to go into the matter of selecting the size and type of water wheel, the electric generator and other equipment that must go into the completed water power electric plant. What has been given is sufficient to enable any one interested to determine whether the water power available is great enough to warrant developing a water power plant. Four or five theoretical horse power will furnish electric light for the average home and power for the vacuum sweeper and smaller motors.

Engage an Expert

It is not often that the layman will be able to instal a water power electric plant, so that it will be as satisfactory as he would like it to be. Of course, he will have a plant that will make some electricity—part of the time, and that will be just so much gained over the old system of lighting with coal oil lamps.

It will pay to have the equipment selected and installed by some one thoroughly competent to do it. But even if he (the owner) is to do the work himself, we strongly advise that he go over his particular proposition with some one who is able to lay out the proposition, pick out the equipment necessary and plan the wiring, location of lights, switches, wall plugs and so on, so that the finished installation will be something entirely worth while.

Thus, your expert engineer will tell you what type and size of water wheel to buy. He may run your levels and locate to best advantage the dam and wheel. He will determine the size of your transmission wire, recommend the proper voltage for the electric system and determine whether it should have a storage battery. It might be said that a storage battery should be used where the water supply is scant. Where water in abundance is available all the time, the thing to do is to use a 110-volt system and let the plant operate continuously. But where it is necessary to store up the water and generate with it two or three times a week, then I should recommend a low voltage, 30- or 32-volt plant with a storage battery. This battery will be charged whenever the plant is run, and current can be used between times from the storage battery with ease and convenience just by snapping on a switch.

One other thing. What is the distance of the proposed water power site from the buildings to be served with electricity? One of the chief items of cost will be the copper wire for the transmission line, particularly if a large sized wire must be used, as for a low voltage plant, or if plant and buildings are very far apart, so that a long stretch of copper transmission wire is necessary. Where the distance is as much as a quarter mile, it may prove a better proposition to install one of the modern farm electric plants right at the buildings. There will be instances where the modern electric plant, complete with its gas engine built into a single unit with the generator, will prove a more economical buy than the water power system, and it will not have its service interrupted by floods, droughts and freezes, as the water-driven plant might be. It is a matter which is worthy of careful investigation, that of putting electricity to work, and if the foregoing shall make it easier for any of the AMERICAN FRUIT GROWER readers to start their own investigations, then it shall have served its purpose.

Water Wheel to Run Generator

Q.—I have an abundant supply of water which can have as much as six feet of fall. Would it be possible to operate a generator with a homemade water wheel? How large a generator is required for 110 volts? Do you know the approximate cost of such a generator? How much greater is the waste in letting a generator run continuously? I am at present using a small wheel for pumping and should want to use only one wheel for both purposes. —G. A., Conn.

A.—From what you tell us about your water supply we judge you could use a water wheel, but I doubt whether the homemade wheel you suggest would be very satisfactory. It would probably pay you to put in a good wheel of the size and capacity recommended to you by the manufacturer when he knows the capacity of the stream.

You might be able to calculate your available current with a small watch, but my suggestion would be that you have an engineer look over the ground and make your calculations for you. That would be the only way to determine what size generator you could use, the size of the water wheel and all the other details about which you would want information.

There is no single rule which will apply to water power plants because each site has its peculiar conditions and the power plant must be built to fit them. The suggestions I have made above, I believe, will answer with the most satisfactory results should you attempt to develop a water power plant on your property.

A Community Country Club

By Miss F. Lincoln Fields, Kansas

"I hope Americans will some day find more time for play."—Carnegie.

I AM going to preach a sermon on farm pleasures and have taken my text from Andrew Carnegie, a man who amassed millions yet enjoyed life and lived to a ripe old age.

I have always wondered why someone could not invent some form of amusement to bring the families and the young people of the country closer together, something out in the country to brighten the community and keep the young folks from spending their evenings in town.

A country correspondent has this to say in regard to gatherings in the country: "We like to encourage country gatherings. Motor service has killed much of the old time community spirit. Some people prefer to go to town and pay for their entertainment, which is not always wise." With a little thought and planning, a good form of amusement could be built up in a community, which would not only keep the rural people away from the cities and reflect credit on the neighborhood, but would attract the city people to the country to spend a few of their evenings.

What the Country Needs

"Eight out of 10 boys leave the farm for cities just as soon as their schooling is completed," comes the report from a rural community. Each exit alone cannot be traced to the inability to make a living on the farm. Many a youth leaves the farm because the rural facilities for enjoyment are too far behind those of the city. Why let the phase of amusement among the rural population be neglected? Youth is keen to observe: when once the boy sees and enjoys city amusement he is not wild to return to meager schoolhouse gatherings and nothing more. We have resources for the best and most wholesome amusement to be had—land, water, sunshine, vegetation, brains, brawn and money.

When the rural people build amusement houses, it seems to me that the country is the proper place to build them. Polished amusements can be created on the farm with energetic management, willing hands and minds.

In the eastern states there are numerous Y. M. C. A., Boy Scout and Camp Fire Girls' summer vacation camps that afford much pleasure for the young people. Why cannot the western states have something similar?

A Good Example

Several years ago I saw, located between Lawrence and Topeka, on the banks of the beautiful Kaw river, several acres and a portion of the river leased by business men of the city and used as a club grounds and pleasure resort. There were houses—a main building and dining hall and numerous small inns. On evenings and on Sundays there were merry social gatherings of the club folks: fishing, boating, games, picnics and just lying on the grass seemed to be the chief amusements.

I believe a similar plan could be successfully carried out by co-operation in a rural district. A club could be formed on the community plan, including any and all good families who wished to join. A few acres of ground, preferably timber and stream, could be leased or bought from some farmer. A main house could be built and occupied by some family who cared to act as clubhouse and grounds keeper. This would be a good position for an elderly couple as a substitute for retiring to the city.

A community country club like this would have to be financed and would require tact in management, but with a number of good heads working together in the same direction and for the same purpose, a well-ordered plan could be made and the club would soon be in good working order.

Uses for Community House

The clubhouse and grounds could be made to cover many uses. The main building should contain a basement for furnace and cook room; main floor for auditorium, library and reading room. The library and auditorium could be constructed so as to be convertible into one big room on entertainment days. Folding chairs and tables could be used. Books for the library and literature for the reading table could be supplied by donations from members. The club grounds could be used the year round. Baseball, tennis, golf, basketball, picnics, band concerts, fishing parties and many other outdoor amusements could be held there. The clubhouse could be used for library, debating programs, farm meetings, entertainments, suppers, socials, speaking, etc. The club ground would be an ideal place for camping out, and so many young people like to camp out a few days or weeks during vacation.

The club grounds need not be centrally located as the automobile eliminates distance. The grounds and buildings could be kept trim and neat by volunteer work by club members. Much money for establishing and maintaining the club grounds and buildings, could be raised by giving entertainments, pie socials, box suppers, etc. Many rural districts have community Thanksgiving dinners. The clubhouse is the ideal place to serve such dinners. On special occasions a public speaker could be engaged to give an address, or a musical company could be secured to give entertainments which would be much enjoyed and would be valuable to the community.

A clubhouse and grounds like this, should be at all times open to members and, on meeting and special days, to the public in general. A community country club would not only keep the rural young people on the farm, but the tide of entertainment would be turned and your city friends would spend many enjoyable evenings with you at the club grounds.

Let some public-spirited community try this club plan.

New Farmers' Bulletins

Food for Young Children. (Revised edition.) Farmers' Bulletin 717.

Standard Varieties of Chickens. (Revised edition.) Farmers' Bulletin 898.

Pop Corn for Market. (Revised edition.) Farmers' Bulletin 554.

Control of Aphids Injurious to Orchard Fruits, Currant, Gooseberry, and Grape. Farmers' Bulletin 1128.

Tile-Trenching Machinery. Farmers' Bulletin 1131.

A Method of Analyzing the Farm Business. Farmers' Bulletin 1139.

Soy Bean. Department Circular 120.

Velvet Beans. Department Circular 121.

An Economic Study of Small Farms near Washington, D. C. Department Bulletin 848.

Organization and Management of Farms in Pennsylvania. Department Bulletin 853.

Cotton Boll Weevil Control by the Use of Poison. Department Bulletin 875.

The Toll of Tuberculosis in Live Stock. Yearbook Separate 810.

Copies of these publications may be obtained on application to the Division of Publications, United States Department of Agriculture, Washington, D. C.

A considerable amount of gasoline now is being made from dry natural gas.

BEAUTIFYING THE HOME AND GROUNDS

By MARY LEE ADAMS

TO OUR readers we will mail a book on ornamental planting, free upon request. A free, individual landscape plan will be furnished free upon request to any subscriber who sends a rough sketch of the home grounds. Indicate location and size of buildings and extent of area to be planted. State what amount you expect to spend on shrubs, flowers or trees. Address Mary Lee Adams, American Fruit Grower, Chicago, Ill.

Second Prize Story

By Mrs. Cora Sheppard, New York

IN THE May issue of AMERICAN FRUIT GROWER you ask the question: "Is Your Home Pretty?" We think our home is pretty, for here our heart is. Before we were married, we went to the woods and gathered ferns. These were placed to the north of the house, as ferns love shade. Thus our back yard is a ferny bower of beauty. The woodland also gave us a spruce, while some friends paid $5.00 for one not so pretty.

We find many rare treasures in the woods. There we dug a small magnolia from the upland. It has grown into a large tree. Each year we bring one or more little magnolias from the woods and I look out of my window into a huge bouquet of magnolia blooms. These come before the middle of May and last well toward fall. We also transplanted a small dogwood, now as high as the second-story windows and a solid mass of white blossoms each spring.

Brave Early Bloomers

We call forsythia the harbinger of spring, as the bushes, full of golden flowers, are at the height of their beauty ofttimes before the last snow has fallen. Cape jessamine, if in a southern exposure, blooms right out with its golden bells in winter if the weather is mild.

Crocuses pop up all over the lawn very early, then come hundreds of daffodils, hyacinths, tulips, narcissi, double and single, white and yellow. Soon it is lilac time, and then we have spireas, snowball, weigela, iris of a dozen colors, peonies of many kinds (bunches of them, hedges of them), philadelphus and hardy hydrangea.

Roses from Slips

Our roses were obtained by placing slips under glass jars in August. Now our back yard has its lavishly blooming rose garden. We asked for the clippings from a friend's California privet hedge and set out the little sticks where they were cultivated for a season and then set just inside the yard fence. Soon the fence was removed and we had a great admired hedge.

One thing we purchased: a wistaria. It came by mail, a tiny vine, and was set at the southeast corner of the piazza. Its trunk is now like a tree and the vine envelopes one end of the portico and

How Much More Attractive It Looks All Clothed In Vines

climbs to the high peak of the house. The lavender blossoms hanging in ropes that reach to a tree outside of the yard and sidewalk, remind me of my childish imagining of fairyland. I love vines and we have clematis, moon vine, dutchman's pipe, magnolia, rose and ramblers, honeysuckle, cinnamon vine, climbing nasturtiums and Virginia creeper.

Some very rare and beautiful dahlias came from far Indiana; lilies and gladiolus from Kentucky. Just a kind exchange with friends. Our mist tree, English hawthorne, clematis and many others, were given us by friends. Thus we have a memory garden of beautiful flowers. One can live in a bower of beauty at very little expense if willing to put forth some effort. It is not the full purse that makes beauty and happiness. It is the love within the heart.

Among the plums, Yellow Egg, Washington and Jefferson were the varieties approved, and Bartlett proved of course received unanimous approval as the best of all pears for canning purposes.

The sugar situation is annoying housewives, but commercial canners are almost up a stump. If they can without sugar, they cannot use the regular brands. If they use sugar at its present prices, the retail prices of their canned fruit will be almost out of reach of the consumer.

The HOUSEKEEPERS EXCHANGE

by Edith Randolph

We will pay $1.00 each for helpful suggestions that will save time, money or strength in all sorts of housework. None save original ideas can be accepted. Unaccepted manuscripts will not be returned unless accompanied by an addressed, stamped envelope. Address "Housekeepers' Exchange," AMERICAN FRUIT GROWER, Chicago.

To remove scorch, lay a cloth wet with diluted peroxide over the scorched spot and dry with a moderately hot iron. Every vestige of scorch will be removed.
Mrs. C. H., Ohio.

When canning fruit, do not wipe the juice or syrup from the rubber or top of the jar before sealing. It will aid in sealing, and bacteria may be introduced by wiping. Mrs. M. S., Illinois.

To wash brushes, dissolve some soda in a little hot water and add to a bowl of cold water. Wash brushes thoroughly in this lukewarm water and the bristles will not turn yellow and the brushes will smell nice and sweet.
Mrs. H. F. P., New York.

To press clothes that are shiny, use a piece of outing flannel under the iron. The nap will not be pressed down tight to the cloth. It will look fluffy and the shiny spots will not show.
D. R., Indiana.

To wash Georgette or light silk blouses, use soft water if possible. Do not rub on a washboard and use only a good grade of soap or soap flakes. Rinse in clear water and wring very dry. Wrap in a towel for several hours and iron the same day. Always iron the sleeves crosswise as they keep their shape much better that way. V. H., Kansas.

A "Handy Book" is made by taking any old book that is well bound and dividing it into departments as—cook book—fancywork—helpful hints. Save the recipes from magazines and paste them on the leaves of the old book in the cooking department. Subdivide this department into cakes, pies, salads, etc. In the same way clip from the magazines all fancywork patterns and paste in the fancywork department which should be divided into—laces—yokes—doilies—inexpensive gifts, etc. In helpful hints, paste all suggestions that will help in the house. In the front of the book put an index with the three main headings and their subdivisions.
Mrs. P. L. C., Kansas.

Instead of using starch for curtains or other sheer material, add a teaspoonful of borax to each gallon of rinsing water. The curtains will be easy to iron and will not have the cloudy appearance given by starch.
Mrs. J. B., New York.

When grinding bread crumbs, tie a paper bag around the mouth of the grinder. This will prevent crumbs from flying all over the table as is the case when ground into an open dish.
Mrs. M. W. S., Arizona.

Use a good floor wax on the linoleum after it has been thoroughly cleaned and dried. This preserves the linoleum and prevents it from gathering and holding grime. A daily rub with a dry mop is all it will need in the way of cleaning.
Mrs. L. H. Sherwood, New York.

When peeling oranges, pour boiling water on them and let stand for five minutes. This will cause the white lining to come off with the skin.
A. H., North Dakota.

The Afgco Cook Book

by Beatrice Holmes

Nut Bread

4 cups flour	2 cups milk
1 cup chopped nuts or raisins	2 tablespoons fat
1 teaspoon salt	2 eggs
	½ cup sugar

3 teaspoons baking powder

Mix the dry ingredients and nuts thoroughly, add milk and well-beaten eggs. Let stand in a greased pan in a warm place until light. Bake one-half hour in a moderate oven.

Croutons

Cut stale bread in one-third inch slices and remove crusts. Spread thinly with butter and cut in one-third inch cubes. Put in a pan and bake until delicately brown, or fry in deep fat. Serve with soups in place of crackers.

Cream of Tomato Soup

1 pint can of tomatoes	1 teaspoon sugar
1 slice onion	1 pint milk
1 teaspoon salt	3 tablespoons flour
⅛ teaspoon soda	⅛ teaspoon pepper

3 tablespoons butter

Scald milk with onion. Remove onion. Make a white sauce with flour, milk, butter and seasoning. Cook 10 minutes, stirring constantly. Cook tomatoes with sugar five minutes. Add soda. Rub through a sieve. Add tomatoes gradually to white sauce. Serve at once with croutons.

Apple and Cheese Salad

Nuts	Soft cream cheese
Apple	Cream

Mix chopped nuts with half their quantity of cream cheese blended with a little thick cream seasoned with pepper and salt. Make into tiny balls. Peel tart apples and remove cores. Slice into rings about one-half inch thick. Arrange slices on lettuce leaves and put a cheese ball in the center and serve with a sweetened mayonnaise.

Lady's Cabbage

¼ cabbage	1 cup milk
1 egg	Salt and pepper

Cut one-half of a boiled cabbage in pieces. Put in a buttered baking dish. Sprinkle with salt and pepper. Cover with one egg lightly beaten and mixed with one cup of milk. Bake in a moderate oven until set.

A Cooling Drink

1 lemon	1 cup sugar

Shaved ice, sprigs of mint, ginger ale

Place in a saucepan the sugar, juice of the lemon and grated rind of one-fourth lemon. Simmer slowly until sugar melts into a syrup. To serve—put into each tall glass one-half cup shaved ice, one sprig mint and one-half cup ginger ale flavored with three tablespoons of the syrup.

Deviled Oysters

2 dozen oysters	1 cup thick cream sauce
1 tablespoon grated onion	2 tablespoons minced parsley
1 teaspoon salt	
¼ teaspoon mustard	1 tablespoon Worcestershire sauce
2 chopped hard-boiled eggs	
1 beaten egg	½ cup fine bread crumbs
1 teaspoon paprika	

Wash the oysters carefully and chop them fine. Add other ingredients and mix thoroughly in a bowl. Set aside to chill. Take one dozen deep shells. Fill with the prepared mixture and brush with beaten egg and cover with fine bread crumbs. Fry brown in hot fat.

For Our Boys and Girls

TANGLES

No. 44—Double Acrostic

The primals and finals spell the name of two girls; words: 1. A girl's name. 2. A boy's name. 3. Destruction. 4. A famous college.

No. 45—Concealed Fruit

A letter taken from each word will reveal in each sentence a delicious fruit:
Pearls are always cherished highly.
Are purple pansies planted there?
Oh, run along and get Etta.

Answers to Last Month's Tangles

No. 40—Oak.
No. 41—Cypress.
No. 42—Ash.
No. 43—Four Word Squares:

M U L E
U P O N
L O C O
E N O N

THE FRUMP

By Edith Lyle Ragsdale

ANNIE-MAE stood with her nose pressed tightly against the windowpane and watched the unloading of a heavy farm wagon just across the street.

"I think they must be poor folks," remarked the little girl to herself. "I am quite sure that I won't play with that girl. My, how shabby she is!" Annie-Mae—whom, as a rule, was a very sweet-tempered little girl—looked complacently at her own spick and span new gingham, then back to the tired and soiled little girl who trotted back and forth between the big wagon and the house, carrying in the lighter pieces of furniture, her calico dress and worn shoes contrasting sharply with the dainty attire of the girl watching from the window of the big white house.

Mr. Andrews, Annie-Mae's father, arose and joined his little daughter. For a time he watched the energetic actions of the new girl, then, as she looked up and smiled, smiled genially in return. "I see you are going to have a new friend, daughter," remarked Daddy Anderson. "And, from the looks of her, a mighty pleasant one."

Annie-Mae tossed her brown curls, "Indeed, I am not going to have anything to do with her," spiritedly retorted the girl. "What would Grace or Gladys think should they see me with such a—a—frump as that!"

"Daughter!" warned Mr. Anderson.

"Well," defiantly, "she is a frump. Just look at her dress. It positively is dirty! And her shoes! And such old ramshackle furniture!"

Mr. Anderson looked the pain he felt. "I am very sorry to hear such words from my own child's lips," he said gently. "And I would like to suggest the propriety of withholding your judgment until the little girl who, it seems to me, is doing a most commendable work, has time to show whether or not she is really untidy. I admire neatness—as you know—but moving day with its manifold and taxing duties is a poor time to judge. Wait a day or two before you write the new girl's name in your black book." With this parting shot Mr. Anderson picked up his hat and left the room, and in it a very disconcerted, half-ashamed little girl.

"I don't care," whispered Annie-Mae. "I know she is—mussy!"

The entrance of Aunt Meg put a stop to the window gazing, and in the pleasing discussion of the party which Annie-Mae was expecting to attend the next Saturday, all thought of the family across the way was lost.

"I know I'll have the best time ever," declared the little girl. "A regular old-fashioned candy pull—won't it be fun!" She laughed happily. "I'm going to wear my new pink tissue gingham, and Daddy is going to the city tomorrow to buy my slippers and stockings."

Aunt Meg nodded. "I know you will enjoy yourself," she agreed. "I used to go to candy pulls and it certainly was fun—though sometimes we got a little careless and stuck taffy in each other's hair!" She smiled at the recollection as she arose to prepare supper.

"How is Bobbie?" asked Annie-Mae a little later, as she and Daddy and Aunt Meg sat grouped about the table.

"Not so well," replied her father. "His throat is sore and he has some fever. The doctor says we must be very careful of him."

Annie-Mae puckered her brow. "Why can't I go to see him?" she asked. "Being only children, as twinsies at that, makes it dreadful lonesome for us."

Aunt Meg shook her head. "Not until the doctor says it is safe," she replied. "As yet we do not know what the trouble is."

With which Annie-Mae had to be content.

The next day the little girl again took up her post beside the window and sat moodily watching the home across the road. And as she watched, as by magic, a transformation seemed taking place. The dirty windowpanes were polished until the tree leaves were reflected in their shining faces; snowy curtains appeared; the floors and porches were scrubbed, the yard swept, and through the back door the kitchen stove reflected the sun's rays from its gleaming surface.

"She surely knows how to work, even if she is a 'frump,'" remarked Daddy Anderson; then, before Annie-Mae could frame a reply: "I wonder if my little girl had an invalid mother and five small brothers and sisters beside a father—to do for, if she would be another such 'frump'!"

Annie-Mae's head drooped.

"An invalid mother and five small children beside her father and herself!" ejaculated Aunt Meg.

Ignoring his child, Mr. Anderson nodded. "Yes. And Hallie—the little girl—takes care of them all. Her father—owing to the mother's long illness and the H. C. L., is unable to hire help." He departed for the office and no more was said relative to the girl across the street.

(Concluded next month.)

Recently incorporated for $1,000,000, the Andrews Bros. Co., Pittsburgh, Pa., have combined their Pittsburgh and Detroit wholesale houses and purchased 1,540 acres of land at Fresno, Calif. Nine hundred acres of this are to be put into grapes while the remainder of it already is in grapes.

When an early crop in the garden is done, plant another one.

Styles for the Month

3243. A Popular Suit for the Small Boy—It is cut in 5 sizes: 2, 3, 4, 5 and 6 years. A 4-year size will require 2½ yards of 27-inch material.

The suit may be of one material or, if preferred, the trousers may be of serge, cheviot, khaki, or corduroy and the waist of drill, linen, chambric, percale, or chambrey. As illustrated the waist may be finished with elbow or wrist-length sleeves.

3245. A Popular Style—It is cut in 4 sizes: 4, 6, 8 and 10 years. For a 6-year size 1½ yard of 27-inch material will be required for the guimpe and 2¼ yards for the dress.

White and green checked gingham, with white lawn for the guimpe, would be cool and attractive for this style. It is also nice for cotton crepe, voile, linen, seersucker, percale and challie.

3247. A Charming Gown—It is cut in 7 sizes: 34, 36, 38, 40, 42, 44 and 46 inches bust measure. A 38-inch size will require 4⅛ yards of 36-inch material for the dress, and 1⅛ yard for the jumper or overblouse. The width of the skirt at lower edge is 1¾ yard.

As here portrayed, handkerchief linen was used, embroidered in blue. The girdle is of blue linen cord. Crochet buttons trim the jumper. This design is good for ratine, epouge, wash silk, chambrey, voile, gingham, taffeta and crepe.

3253. A Becoming Youthful Dress—It is cut in 3 sizes: 16, 18 and 20 years. A 16-year size will require 4½ yards of 44-inch material.

Figured challie, with plaitings of satin and collar of white batiste would be attractive for this design. Taffeta, gingham, voile, organdie, poplin, chambrey, crepe and crepe de chine are nice, too. The width of the skirt at lower edge is 1½ yard.

3262. A Pretty Dress for the Growing Girl—It is cut in 4 sizes: 8, 10, 12 and 14 years. A 12-year size will require 4½ yards of 27-inch material for the dress, and 2¼ yards for the "jumper" or overblouse.

Plaid gingham in blue tones is here combined with plain chambrey. One could have serge and plaid or checked suiting. Linen, embroidered, or figured and plain voile combined would be attractive.

CATALOGUE NOTICE

Send 10c in silver or stamps for our Up-To-Date Spring and Summer 1920 Catalogue, containing 550 designs of Ladies', Misses', and Children's patterns, a concise and comprehensive article on dressmaking, also some points for the needle (illustrating 30 of the various, simple stitches), all valuable hints to the home dressmaker.

Send all orders to AMERICAN FRUIT GROWER, Pattern Dept., CHICAGO

ORDER BLANK FOR PATTERN
Price 15c Each

PATTERN DEPT.,
AMERICAN FRUIT GROWER, State-Lake Bldg., Chicago.

Enclosed find.....cents for which send me the following:

Pattern No.....Size..... Pattern No.....Size.....

Pattern No.....Size..... Pattern No.....Size.....

Name.....

Address.....

Postoffice.....State.....

Be sure to give the pattern number and the correct size.

And—would you listen to this!

Atlantic City
Saturday noon

PETEY BOY!

Just a night flash by fast mail to uncork you a real fuss-stirring idea that has five aces shaded!

Now, bolt this down:—no two people, unless they run a circus or write encyclopedias, ever agree offhand on which is a camel and which is a dromedary when you line the two up and check off one hump on one and two humps on the other. *You can't do it with the sun shining!*

Spill this "hump" question first time you're in a bunch of live ones—if you want to see fur fly! Never heard such a wind-jamming squall in my life as tonight when I passed it to our crowd! You know Betty Ellen Jones. Well, she said a dromedary was a he-camel hunting a date in the desert! And, Betty's "Vassar, '20"—rah, rah! All right, Betty!

All you've got to do is dig out your deck of Camel cigarettes. That "bird" out front clinches the argument—*apparently*—but!

In the classic language of bigger business circles—"you tell 'em Cricket, Katy did!"

Report your luck quick. Try it on old Jig Jones! And listen, Peter. I'll shortly slip you some smoke news that'll make Jake's ideas rattle like a tin can tied to a towser dog's tail! *S'long!*

Yours for warm socks
next winter!

Shorty.

International Apple Shippers' Meeting

More than 1000 members and guests of the International Apple Shippers' Association attended its 25th annual convention at the Sherman Hotel in Chicago during the second week of August. This splendid organization of more than 850 members had its origin just a quarter of a century ago when 25 apple shippers met at the old hotel of the same name. One of the two living charter members, Mr. C. C. Bell of Boonesville, Mo., addressed this convention.

Fruit growers are particularly interested in the new Perishable Freight Tariff No. 1 which came in for a full discussion at the convention. The International Apple Shippers' Association, the National League of Commission Merchants, and the Western Fruit Jobbers, through their joint council fought the original tariff and secured modifications and reductions which will amount to 30 to 50 per cent in the rate and which will save millions of dollars annually to growers and shippers of fruits and vegetables. Special commendation was given Mr. R. G. Phillips, secretary of the organization, for his leadership in this big victory.

The officers for the ensuing year are: President, E. T. Butterworth, Philadelphia; Vice-president, T. N. Minick, Chambersburg, Pa.; Treasurer, Geo. W. Davison, New Orleans; Secretary, R. G. Phillips, Rochester. Executive Committee, W. L. Wagner, Chicago; Edgar W. J. Harding, Boston; Wayne M. French, New York; Joe Castellini, Cincinnati, and E. H. Neustadhl, Milwaukee.

A number of nursery catalogs come to my desk. Some of them represent apples, pears or peaches, almost as large as the head of a child. The question arising in my mind is, is the exaggeration of size a medium that more forcibly impresses the buyer to invest than when the illustrations are of more modest size? The cuts of some apples are made so large that three can only be shown on a catalog cover. One catalog cover is before me showing a hundred or more beautifully colored apples being poured out of a barrel. To my mind this modest exposition of the apple is more enticing than those of normal specimens used by some nurserymen. Then again if the nurseryman who shows such big fruits exaggerates in the direction of size, he may exaggerate in other statements he has made in his catalog, thus the candid, truthful representation must be considered in the end the winner.

CLASSIFIED ADVERTISEMENTS

POSITIONS AND HELP WANTED

WANTED — POSITION AS SUPERINTENDENT of Commercial Orchard; 25 years' practical experience, eligible and willing to do any work. Best of references. Alvia G. Gray, Bloomington, Ind.

WANTED—POSITION AS ORCHARD MANAGER by young man with university degree and experience in large commercial orchard. Can give good references. L. L. Newland, Mitchell, Ind.

$28 TO $46 WEEKLY IN YOUR SPARE time doing special advertising work among the families of your city. No experience necessary. Write today for full particulars. American Products Co., 2168 American Bldg., Cincinnati, O.

WANTED — COMPETENT AGRICULTURIST to manage the conversion of large tract cut-over land into orchards and pasture grounds. Address W. C., care of American Fruit Grower.

WANTED—RELIABLE MAN TO ACT AS District Superintendent to book orders for Fruit and Ornamental trees, roses and shrubbery and engage sub-agents; exclusive territory; pay weekly. Apply at once. C. H. Weeks Nursery Co., Newark, New York State.

WANTED — MEN TO REPRESENT US where we have open territory in the states of Mich., Ohio, Ind., Ills., Wis., Iowa, Pa., and New York. Must be able to furnish reference. Greenings Big Nurseries, Monroe, Mich., 206 So. Monroe St.

WANTED—TO RENT ON SHARE BASIS, Fruit and garden farm by an experienced gardner and orchardist. Desirious of getting located coming fall; references furnished. Address Gardner, Brownsville, Pa.

FIREMEN, BRAKEMEN, $225-$250 MONTHly, all railroads, everywhere, experience unnecessary. Railway Association, Desk M 2, Brooklyn, N. Y.

WE OFFER FINE CHANCE FOR LIVE MEN and women to exclusively represent us on $50 to $100 week earning basis. For details write Desk 11, Quality Garment Company, 79 Fifth Avenue, New York.

MAN, THOROUGHLY QUALIFIED, FINANcially and otherwise responsible, successful in own affairs, desires position as manager of apple orchard, bearing or young. Only position of responsibility and good salary payment will be considered. Orchard Manager, care American Fruit Grower, Chicago, Ill.

BIG MONEY AND FAST SALES. EVERY owner buys gold initials for his auto. You charge $1.50, make $1.35. Ten orders daily easy. Write for particulars and free samples. American Monogram Co., Dept. 92, Glen Ridge, N. J.

RAILWAY TRAFFIC INSPECTORS EARN from $110 to $200 per month and expenses. Travel if desired. Unlimited advancement. No age limit. We train you. Positions furnished under guarantee. Write for Booklet CM 84, Standard Business Training Institute, Buffalo, N. Y.

AGENTS: MASON SOLD 18 SPRAYERS AND Autowashers one Saturday; profits $2.50 each; square deal; particulars free. Rusler Company, Johnstown, Ohio.

REAL ESTATE FOR SALE

ORCHARD—COMPLETELY EQUIPPED, SUperior orchard property for sale in southeastern Pennsylvania. Sixty-three acres in bearing, peach and apple. Address: Owners, care of American Fruit Grower.

40 ACRE MICHIGAN APPLE, PEACH, Cherry, Pear Farm. 80 acre Michigan fruit farm. Fine modern buildings. 60 acre farm, 20 acres apples, 4 cherries, $4,600. Many others. Free lists. Zander Bros., "Fruit Farm Specialists." Milwaukee, Wis.

FRUIT AND STOCK FARM, MICHIGAN, 360 acres $10,000. 35 acres apple orchard, alone worth the price. Walter Gaines, Urbana, Ill.

COMMERCIAL ORCHARD, 40 ACRES, ONE mile from railroad town. Ark Black, Delicious, Stayman, Grimes, bearing first crop. Old and alone. Wm. Thornley, Norfork, Ark.

VIRGINIA ORCHARDS AND FARMS IN best fruit and farming sections. Prices very reasonable. Healthful climate and beautiful country. State wants and get descriptions. Wilder & Co., Charlottesville, Va.

FARMS FOR SALE—FRUIT FARMS, WONderful opportunities. Niagara county, New York, "America's greatest bargains." Nice buildings. Rich soil. State roads. Low taxes. Prices, sixty to one hundred dollars per acre. Investigate immediately. Catalog free. Buffalo Farm Exchange, Buffalo, New York.

FARMING PAYS IN MICHIGAN'S FRUIT Belt. Hardwood land at $15 to $35 per acre, in tracts of 10 to 160 acres. Get land for poultry, vegetables, fruit. Be independent. Near towns, schools, good trans. Booklet free. Swigart Land Co., Z1266 First Nat'l Bank Bldg., Chicago, Ill.

FRUIT BELT FARM, FOUR THOUSAND bearing trees. Beautiful home, one-fourth mile from telegraph, express, freight and post offices. Great bargain. E. G. Stevens, Burnham, Mo.

CALIFORNIA FARMS, NEAR SACRAMENto, for sale, easy terms; write for list. E. R. Waite, Shawnee, Okla.

FOR SALE—BEST APPLE ORCHARDS IN Ozarks. Price reasonable. Terms. Lands suitable for orchards, cheap. W. F. Reeves, Marshall, Ark.

READ THE RABBIT JOURNAL, ST. FRANcis, Wis. Two years $1.00. Trial subscription 25c.

MISCELLANEOUS

FRUIT PICKER — PICKS APPLES AND pears from the ground. No ladder necessary. Send $1 for metal part and full directions. P. W. Staffeld, Saginaw, W. S. Mich., Box 104.

WERNER'S ARBUTUS; REFINED, FASCInating odor, distinctly individual; ounce bottles $1.00; one-fifth ounce 25 cents; mailed anywhere in U. S. Werner Extract Company, Mechanicsville, N. Y.

HOW ABOUT YOUR CIDER? GOING TO put some in clean, new, whitewood, parafined kegs? Write J. D. Hollingshead Co., 208 S. LaSalle St., Chicago, Ill., for prices, stating quality and sizes wanted.

MILK GOATS—WRITE GEORGE WICKERsham, 2916 East Central, Wichita, Kansas.

"NO TRESPASSING" AND "NO HUNTING" signs, weatherproof oilboard; size 8x10, bold lettering, either kind 75c dozen postpaid. G. H. Thomas, Monessen, Penna.

VIOLINS WITH COMPLETE OUTFITS FOR sale. Five days' trial. Easy monthly payments if wanted. Write Miss Bertha Meddiss, Shawnee, Kansas.

COUNTLESS OPPORTUNITIES—ARIZONA-New Mexico—Northern Mexico. Our service helps you. Subscription $1.00 yearly. Rogers-Burke Service, Tucson, Arizona.

BOOKS FOR EVERYBODY. WRITE TODAY for free illustrated guide to the latest books. Wesley Mills Company, 500 Broadway, Dept. E, New York.

ATTENTION—FRUIT AND POTATO GROWers and shippers. For sizers, sorters, carriers, elevators, packing house supplies, write to Price Manufacturing Co., Inc., Yakima, Washington.

WE COLLECT ACCOUNTS, NOTES, CLAIMS anywhere in world. No charges unless we collect. May's Collection Agency, Somerset, Kentucky.

WANTED FOR A 460-ACRE PROPOSITION. Horticulturist that thoroughly understands the care of newly planted trees. Give references and full particulars. W. E. Schmick, Hamburg, Pa.

PLANTS, TREES AND SEEDS FOR SALE

NEW RACE STRAWBERRIES PREFERRED for canning. Color, flavor, firmness of the wild in garden berries. Plants mailed, $1 dozen. Wm. M. Freeman, New Meadows, Idaho.

STRAWBERRY PLANTS, IMPROVED SENator Dunlap, magnificent in fruit and foliage. Low prices. W. D. Gay, Essex, Ia.

THE WONDERFUL BRODBECK CHERRY. Twice the size of others. Trees for sale. Write for history. S. S. Brodbeck, Gallatin, Missouri.

FOR SALE—BEARING APPLE AND PEACH orchard of 2,000 trees. Easy terms to man of experience. Henry P. Corwith, Saluda, N. C.

Successful Fruit Growers Demand These Qualities in Spray Hose

As experienced fruit growers are well aware, only a spray hose built to meet the service required can achieve efficient results in spraying.

The hose must be able to carry a pressure high enough to drive the spray even to the topmost branches. It must insure a free flow of the spraying solution, no matter how thick and strong that solution may be.

Its rubber tube must be so compounded as to combat the rotting action of the chemicals.

The cover must stubbornly resist abrasion, it must wear equally well throughout its length, it must not crack nor burst.

Finally, the hose must be so light that it can be handled easily by one man.

All of these qualities, demanded by the experienced fruit grower, are embodied in Goodyear Monterey Spray Hose; as a natural consequence, it is extensively used in every fruit-growing section of America.

Goodyear Monterey Spray Hose, like Goodyear Cord Tires, is built to protect our good name. For further information write to The Goodyear Tire & Rubber Company, Akron, Ohio, or Los Angeles, California.

GOODYEAR

SPRAY HOSE

The Best Roofing Investment—

THE only *economical* roof is one that *combines* low cost with long service.

You will always find *that* combination in Barrett Everlastic Roofings. And their economy is still further increased by quick, inexpensive laying and almost entire freedom from upkeep cost.

No matter what steep-roofed building you are planning to cover, one of the four styles of Everlastic is exactly suited to the job.

In roll roofmg you have a choice of two styles—one plain-surfaced, the other handsomely coated with red or green crushed slate.

There are also two styles of Everlastic Shingles, one single and one in strips of four—both surfaced with crushed slate in artistic natural art shades of red or green.

All four styles of Everlastic are fully described in our illustrated booklets, which we will send free on request. It will pay you to send for them.

The Barrett Company

New York	Chicago	Philadelphia	Boston
St. Louis	Cleveland	Cincinnati	Pittsburgh
Detroit	New Orleans	Birmingham	Kansas City
Minneapolis	Dallas	Nashville	Syracuse
Seattle	Peoria	Atlanta	Duluth
Salt Lake City	Bangor	Washington	Johnstown
Lebanon	Youngstown	Milwaukee	Toledo
Columbus	Richmond	Latrobe	Bethlehem
Elizabeth	Buffalo	Baltimore	

THE BARRETT COMPANY, Limited:
Montreal, Toronto, Winnipeg, Vancouver
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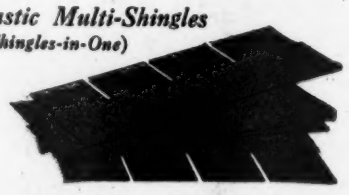
Everlastic "Rubber" Roofing

This is one of our most popular roofings. A recognized standard among "rubber" roofings. Famous for durability. Made of high-grade waterproofing materials, it defies wind and weather and insures dry, comfortable buildings under all weather conditions. Tough, pliable, durable and low in price. It is easy to lay, no skilled labor required. Nails and cement in each roll.

Everlastic Slate-Surfaced Roofing

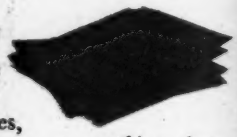
A high-grade roll roofing, *surfaced with genuine crushed slate*, in two natural shades, red or green. Needs no painting. Handsome enough for a home, economical enough for a barn or garage. Combines real protection against fire with beauty. Nails and cement with each roll.

Everlastic Multi-Shingles
(Four-Shingles-in-One)



Made of high-grade, thoroughly waterproofed felt and *surfaced with crushed slate* in beautiful natural slate colors, either red or green. Laid in strips of *four shingles in one* at far less cost in labor and time than for wooden shingles. Give you a roof of artistic beauty worthy of the finest buildings, and one that resists fire and weather. Need no painting.

Everlastic Single Shingles



Made of the same durable slate-surfaced (red or green) material as the Multi-Shingles, but cut into individual shingles, 8 x 12¾ inches. Laid like wooden shingles but cost less per year of service. Need no painting.